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THE ROMAN WALL IN BRITAIN.

BY

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To the educated American, upon his first visit to our ancestral home in England, the most fascinating objects his eyes rest upon unquestionably are her ivy-grown ruins, with their crumbling battlements and mouldering stones. He feels his youthful confidence, fostered by our untrimmed fields and shaggy forests, gently giving way to wholesome reverence, as his imagination wanders among these venerable relics of "a foregone world." But if Gothic Fane or Norman Keep, in their lovely ruin, whisper to his heart their message of soothing melancholy, how stimulating to his intellectual insight is his first glimpse at the mighty traces left upon the little island by the masters of the ancient world. It is of the most marvellous of these that I shall attempt to give a slight picture: and I will preface my account of it by quoting some fine verses about it contributed

more than half a century ago to *Blackwood's Magazine* :

" Where yonder reaching hill slopes boldly down,
 Far-stretching eastward, with a long decline,
 Stand where the cottages the summit crown,
 * * * * *
 [And mark] that line of green that seems to sweep
 Sheer forward on to the not distant deep ;
 * * * * *
 What an unbending course it seems to keep !
 * * * * *
 Here plant thy foot where many a foot hath trod,
 Whose scarce-known home was o'er the southern wave,
 And sit thee down ; on no ignoble sod,
 Green from the ashes of the great and brave ;
 Here stretched that chain which nations could enslave ;
 * * * * *
 This shapeless mound, thou know'st not what to call,
 Was the world's wonder once—this is The Roman Wall.

There was the deep-trenched Vallum—to the left ;
 The Agger here ; o'er many a hill they went,
 O'er many a stream ; through many a craggy cleft,
 An endless and perpetual battlement.
 And when the spring the frozen nations sent,
 The restless Pict—, forth from his thawing snows,
 This was his bound-stone, oft with blood besprent—,
 Here, where the daisies settle, and the rose
 Now trusts her tender leaves, and the shy violet blows."*

" Few who have visited this district " says the learned historian of " The Romans under the Empire," " have resisted the contagion of the Wall-Fever, caught from the genial enthusiasm of the local antiquaries, the loving reverence of those who dwell beside it, and the three-fold interest derived from its bold design and execution, its much-contested history, and the romantic scenery with which it is surrounded."†

I propose first to give with some particularity an ac-

* The Roman Wall—*Blackwood's Magazine* (Oct., 1822), vol. xii., p. 409.

† Charles Merivale. *Quarterly Review* (Jan., 1860), p. 123.

count of the origin and character of this great work, and of the conflicting theories that have been maintained in regard to the share taken by different persons in its erection. Here we encounter the confusing circumstance of having, in the words of Dr. Latham, "more builders than structures."*

Then I shall endeavor to present a slight picture of its present condition and of what the inquisitive traveller will see as he strolls along its course. In doing this I shall have occasion to refer to some of the numerous discoveries that have been made during the progress of extended excavations carried on at several points along its line by Mr. John Clayton, of Chesters. These may serve to illustrate somewhat the character of the men, and the manner of their life, who for three long centuries, through summer's heat and winter's cold, kept ward and watch along its wind-swept battlements against the fierce barbarians of the North, struggling for their liberty with the mighty power of Rome.†

In using the term, "The Roman Wall," I wish to be understood to mean the great structure, drawn by the Roman conquerors across the northern part of England, from the mouth of the Tyne, at Wallsend, near Newcastle, on the east, to Bowness on the Solway, on the west; a distance of some seventy-three and a half miles. This work has always been called The Great Wall; while for the dwellers in its neighborhood it has usually gone by the name of The Picts' Wall.

* Smith's "Dictionary of Greek and Roman Geography," vol. i., p. 436.

† I wish to acknowledge, once for all, my great indebtedness to "The Roman Wall, a description of the mural barrier of the north of England, by the Rev. J. Collingwood Bruce, LL.D., F. S. A." (third edition, 1867), from which I have freely borrowed whatever seemed useful for my purpose.

But it must always be borne in mind, to prevent confusion, that the Romans also built another wall across the narrowest part of Scotland, a little to the north of Edinburgh and Glasgow, from Bridgness, on the Frith of Forth, to Dunbarton, on the Frith of Clyde. A few preliminary words of explanation about that structure seem to be required. The northern wall was made of earth only, and was about half the length of The Great Wall, some thirty-seven miles. It was built (A. D. 141) by Lollius Urbicus, legatus, or provincial governor, of Antoninus Pius, along a line of forts constructed by Agricola, sixty years previous (A. D. 81).^{*} Accordingly it is known to historians as the Wall of Antoninus; locally it has usually gone by the name of Graham's Dyke. Many modern historians are of the opinion that it was this wall, subsequently strengthened by Septimius Severus, during his famous campaign in Scotland (A. D. 208), which the later Roman writers have had in mind, when they have spoken of the Wall of Severus.[†] Very few traces of the Wall of Antoninus are still to be seen, and the principal interest attaching to it in recent times has arisen from the discovery about twenty years ago of an inscription which marked its eastern termination. It was that discovery which caused Sir Charles Lyell to retract his previously expressed opinion that there had been an elevation of the coast line of central Scotland, subsequent to the times of the Roman occupation.[‡]

Lest it may appear strange that the Romans should

^{*} Capitolinus, "Vit. Antonini," 5.

[†] Mommsen, "Provinces of the Roman Empire," vol. i., p. 203; Skene, "Celtic Scotland," vol. i., p. 89, (*Note* 27); Elton, "Origins of English History," p. 325.

[‡] Lyell, "Antiquity of Man" (fourth edition), p. 55; following the authority of D. M. Home (Trans. Roy. Soc. of Edinburgh), vol. xxvii., p. 39.

have been at the pains to construct at separate times two different walls across one little corner of their domain, to mark the bounds of the empire, and to restrain the attacks of their unsubdued barbarian neighbors, it must be borne in mind that this was in precise accord with their habitual policy as displayed elsewhere. Julius Cæsar first drew a line of forts along the course of the Rhine, at the foot of the Jura range, in order to protect the Gallic province against the inroads of the Helvetii. After the conquest of Dacia by Trajan, a great earthwork, or Limes, afterwards strengthened in parts by Probus with walls of stone, was constructed from near Ratisbon, on the Danube, to the neighborhood of Cologne, on the Rhine.* Throughout portions of this whole distance (variously estimated at from two hundred to four hundred miles), there still exist extensive remains, which go now by the name of *The Devil's Wall* or *The Heathen's Wall* (Heidenmauer). This, however, must not be confounded with another Heidenmauer, where Cooper lays the scene of his novel bearing that title, which is to be seen on the mountain near St. Odille, in Alsace, and which has probably come down from prehistoric times.

But of all the relics of Roman power anywhere remaining, of a similar character, the remarkable structure in northern England is on a much grander scale, and displays a far greater amount of labor and skill than any to be found elsewhere. The designation of *The Great Wall* is well deserved. It was the opinion of Horsley,

*Gibbon, "Decline and Fall of the Roman Empire," Chap. xii; Yates, "On the Limes Rhaeticus and Limes Transrhenanus" (Trans. Archæol. Inst. 1852), vol. viii; Hodgkin (Archæologia Eliana, 1882).

by far the ablest of the earlier English antiquaries, and whom Bruce justly styles "the great Horsley," that this work also, as well as that in Scotland, grew out of a line of camps and forts built by Agricola.* In the exquisite life of Agricola written by his son-in-law, the historian Tacitus, we are told about "two arms of two opposite seas which shoot a great way into the country, and are parted only by the strip of land which was covered by the Roman forts."† Plainly this refers to the line of forts in Scotland I have already spoken of, where The Wall of Antoninus was afterwards built. This was in Agricola's fourth campaign in Scotland, (A. D. 81) and marked the limits of the region he had secured. Afterwards, in two campaigns, Agricola penetrated still farther North, and defeated the Caledonians in that famous battle of Mons Graupius, which, by a mis-reading of the early editors was called Mons Grampius. That great conflict is memorable for the speech of Galgacus to his troops in which he tells them that the Romans "make a solitude and call it peace." Its site has always been a puzzle to the Scotch antiquaries, who have sought for it near the chain of the Grampian Hills, although the name of the Grampians is of no older date than the XIVth century.‡ Burton, the latest historian of Scotland, gives up in despair the problem of its locality.§

* Horsley, "*Britannia Romana*," p. 98.

† Tacitus, "*Vit. Agricolaë*," Ch. xxiii.

‡ Mackintosh, "*Hist. of Civilization in Scotland*" (vol. i., p. 94), gives the various sites that have been suggested:—Chambers and Gen. Roy at Ardoch; Gordon at Dalginross, in Perthshire; some in Fife; others at Urie, in Kincardineshire; and Skene at Cleaven Dyke, near the junction of the Tay and the Isla.

§ *Hist. of Scotland*, vol. i., p. 16.

But although there can be no question in regard to Agricola's northern chain of forts, Horsley's opinion, that he also built a second line across Northumberland, was based solely upon his understanding of another vague passage in Agricola's biography, in which we are told that "many states, that up to this time had been free . . . were surrounded by posts and castles."* In the light of the knowledge of Horsley's time, a century and a half ago, this opinion was, perhaps, not unreasonable; and it has been generally followed by the older school of English antiquaries, including Hodgson, in his elaborate and learned history of the county of Northumberland, published about forty years ago.† But it is no longer tenable in the light of recent explorations and discoveries; no inscription has ever been found along the line of the wall bearing a date earlier than the time of Hadrian, forty years later than Agricola's day; many of the stationary camps attached to the wall could only have been placed where they stand in order to accommodate the garrisons which were to man it; and this theory has been abandoned by Hubner, the editor of that volume of the great collection of Roman inscriptions, which is devoted to those found in Britain.‡ As Hubner is the latest authority, who has thoroughly investigated the question, this point may be considered finally settled. All that can be regarded as probable is that Agricola in his advance northward seized and fortified certain commanding positions, which afterwards fell in with the line of the wall.

* Vit. Agricolaë, Ch. xx.

† Hist. of Northumberland, vol. iii., part 2, p. 157.

‡ Corpus Inscriptionum Latinarum, vol. vii., p. 99.

Before considering the question, however, by whom these great works actually were constructed, it will be well to take into account the nature of the region they would have to traverse, as well as to describe with considerable detail their method of construction. From the Tyne to the Solway, in a direct line, is a distance of only about sixty miles, admirably adapted to fortification from the nature of the ground. The Tyne and the Eden, with their respective tributaries, rising together in the central portion of the island, fall to the east and to the west into deep trough-like valleys, whose northern banks have a considerable elevation. But between the headwaters of the south Tyne and the Irthing, a branch of the Eden, the land has been raised in some primeval convulsion of nature, and presents a formidable barrier of basaltic cliffs, facing to the North. Sometimes this has been styled the backbone of England. This natural barrier of cliff and stream, broken only at intervals by abrupt fissures, is of itself no slight obstacle to the approach of an enemy from the north, and it was rendered very difficult of passage by the system of fortifications adopted. If we study carefully the topographical conditions of the country through which these have been carried, it will become evident that they have been equally well designed as a protection against sudden surprise from the south. The natives of the region on that side of the wall, although conquered, were not to be trusted. In the event of their kinsmen in the north gaining an advantage over their invaders, they would have been prompt to avail themselves of it. This the Romans understood, and with characteristic prudence made themselves secure on both sides, by what was in reality

an intrenched camp, extending across the island, and fortified both ways.

The design of this great system of defences may best be made clear, if it be understood that it was made up of three essential and distinct portions. *First*, there was a wall of stone, or *murus*, strengthened by a ditch on the northern side. *Second*, came a wall of earth, or *vallum*, uniformly to the south of the stone wall, consisting of three ramparts, separated by a ditch. *Third*, there was a series of stationary-camps, castles, and watch-towers, together with the roads for the accommodation of the troops who manned the wall. These roads were either between the *murus* and the *vallum*, or to the south of them both.

All the works run from one side of the island to the other, nearly in a straight line, and for the most part in close companionship. The *murus* and the *vallum* are generally within sixty or eighty yards of each other, although the distance varies according to the nature of the ground. Sometimes they are so close as barely to admit of the military way, while in one or two instances they are upwards of half a mile apart. They are most widely separated in the high lands of the central region. Here the stone wall seeks the highest ridges; while its usual companion, the earth wall, runs along the adjacent valley. Both works, however, are so arranged as to afford each other the greatest support which the nature of the country allows. The stone wall usually seizes those positions, which give it the greatest advantage on its northern side; the earth wall, on the other hand, is so drawn as to occupy ground that is strongest towards the south.

As before stated, the murus, or stone wall, extended from Wallsend, on the Tyne, to Bowness, on the Solway, a distance of seventy-three and a half miles; but the vallum falls short of this distance by about three miles at each end. The most striking feature of both is the determined manner in which they pursue their straightforward course. The earthwork actually makes fewer deviations from a straight line than the stone wall; but as the latter sometimes traverses higher ground, its tendency to adhere to a direct line is more conspicuous. Stretching along in its onward course the murus swerves from a straight line only to take in the boldest elevations; but if it never swerves except with this object in view, so it never fails to seize the highest points as they occur, no matter how often it is compelled to change its direction; never bending in a curve, but always at an angle. Hence, along the craggy precipices of the central basaltic ridge it is compelled to pursue a remarkably zigzag course, taking in every projecting rock. This mode of proceeding involves the accommodating of itself equally to the depressions of the mountainous region it traverses. Without flinching it sinks into each gap or pass, as it comes, and after crossing the narrow valley ascends unfalteringly the steep acclivity on the other side. At the river Irthing, in Cumberland, it met in its westward course a precipice of upwards of a hundred feet in height. It cannot now be ascertained whether it was carried up the face of the cliff or not, for the strata are of soft and yielding nature and are continually being eaten away by the river. Certain it is, however, that the stone wall, accompanied by its ditch, is still to be seen on the very brink of the cliff at its

summit. If it failed to climb this particular cliff, we are assured by Dr. Bruce that it is the only one in the course of the line from sea to sea, which it refused; and if it did ascend it, it must have more nearly resembled a leaning tower than a barrier wall. Naturally the question will suggest itself why it was carried along such precipitous crags, which might be deemed a sufficient protection of themselves. In Dr. Bruce's opinion the answer is two-fold; that the shelter of the wall was required in such places to protect troops, who came from warmer countries, from the bitter northern blasts during the winter months, when the hardy Caledonians were most accustomed to making their attacks; and that the cliffs alone would not have been sufficient to prevent such a bold and agile foe as the Scotch Highlanders from breaking through the barrier.

Thus far we have considered only general conditions common alike to both the main parts of the works. I will proceed to describe with more particularity the method of construction of the murus and the vallum.

For a distance of many miles west from Newcastle the present highway leading to Carlisle runs over what was once the stone wall. When General Wade was summoned from Newcastle, in 1745, to the defence of Carlisle against the young Pretender's forces, he was obliged to turn back at Hexham for the want of a road practicable for artillery, and only reached the western side of the island by a circuitous route, and after a month's delay. The consequence was that Carlisle fell into the enemy's hands, and a hostile force penetrated into the very heart of England. After the rebellion was quelled the government hastened to obviate the recurrence of

such mishaps, and it was determined to make a good road direct from Newcastle to Carlisle. General Wade was charged with the execution of the work; the same officer, whose subsequent exploits in road-making in the Highlands of Scotland gave occasion for the familiar jingle:

"Had you seen but this road before it was made,
You would lift up your hands and bless General Wade."

The method adopted by him may be clearly seen at the present day. "In dry weather, and particularly after wind," says Dean Merivale, "we may trace at intervals in the centre of this road the facing stones of the wall *in situ*, lying in lines about nine feet apart, just where they rose above the foundations; while in many places the rough ashlar of its upper courses, thrown loosely down to the right and left, still crop up to the surface, not yet ground to dust by the wear and tear of almost a hundred and fifty years' traffic."

As in no part of its course at the present day is the wall entirely perfect, it is difficult to ascertain what its height originally was. The oldest writer who gives its dimensions is the Venerable Bede, whose Ecclesiastical History dates from A. D. 731. He lived in the monastery of Jarrow, anciently a part of the parish of Wallsend, and must have been familiar with the appearance of the eastern end of it at least. He says, "it is eight feet in breadth and twelve in height in a straight line from east to west, as it is still visible to beholders." This description is probably as it appeared in his own neighborhood, where, in a flat country and on the border of a navigable river, we may naturally suppose it would have been liable to suffer spoliation. The next eye-

witness comes eight hundred and fifty years later. Sir Christopher Ridley, in a letter written in 1572, says "the breadth is three yards, the height remaineth in some places yet seven yards." Samson Erdeswick, who visited the western end of the wall on the Solway in 1754, says "the sea ebbeth and floweth there, and the wall beginning there, and there yet standing of the height of sixteen feet runs for almost a quarter of a mile together along the river side westward." Camden, who saw it in 1599, says that at a place now called *Caer Vorrán*, "the wall thereby was both strongest and highest by far; for scarce a furlong from hence upon a good high hill there remaineth as yet some of it to be seen fifteen feet high and nine feet thick, built on both sides with four-square ashlar stone." It is not unreasonable to suppose that the wall was also originally surmounted by a parapet at least four feet in height. From the concurrent testimony therefore of all these witnesses we may conclude that in its original dimensions it must have been about twenty feet high. Such an elevation would be in keeping with its breadth; somewhat more than twice as high as it was broad. In the portions now remaining it rarely exceeds five or six feet in height; though occasionally in hollows, or other favorable situations, as many as eleven courses of stone are found standing together to the height of nearly as many feet.

The breadth varies considerably; in some places it is six feet; in others nine and a half; so that the average would have been about eight feet, as Venerable Bede states. The frequency with which the breadth varies inclines Dr. Bruce to the belief that numerous gangs of laborers were simultaneously employed upon

the work, and that each superintending centurion was allowed his discretion as to its width. The northern face is continuous ; but the southern has numerous out-sets and insets, measuring from four to twelve inches ; probably at the points where the sections joined.

The same difference in superintending skill seems also to be sometimes indicated by the quality of the masonry. The stones are always of the shape that can be most easily quarried, and of a size which admits of easy transport ; never exceeding what a man could carry slung over his shoulders. When good material was available near at hand it was taken ; but an inferior quality of stone was never used to avoid the labor of bringing a better even from a distance, as great sometimes as seven or eight miles. The quarries that were worked for this purpose can generally be ascertained now, and in some places the quarrymen have left their names carved upon them. The most interesting example of these is carved on the face of a rock, which overhangs the picturesque little river Gelt, in Cumberland.

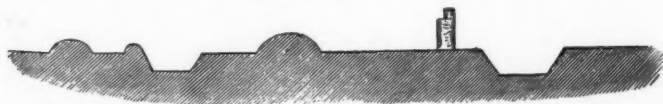
The wall was faced on both sides with carefully squared blocks from fifteen to twenty inches long, ten or eleven broad, and eight or nine thick ; and the interior was filled in with rubble-work of any sort firmly imbedded in mortar. Its strength has largely depended upon the character of the mortar employed. Limestone, which is abundant in most parts of its course, was ground up and carefully mixed, unslacked, with sand, gravel and chippings of stone. When about to be used, water was freely mixed with the mass, which would set in a few hours, and soon become as hard as rock. The facing-

stones were all roughly hewn into something of a wedge shape and after two or three courses had been set in a thick bed of mortar and carefully pointed, a mass of mortar was poured into the interior, and stones of every kind and shape of a convenient size were puddled in amongst it. Course upon course was added, all preserving their parallelism with great exactness, but making no attempt at breaking joints, and one mass of concrete was piled upon another continuously, until the whole became a solid, compact structure. It might have lasted perfect until now, if man's destroying hand in removing the facing-stones for building purposes, had not given the opportunity for roots of trees and shrubs, and the disintegrating tooth of the frost, to work their will upon it.

Throughout its whole length the stone wall was accompanied on its northern margin by a broad deep ditch, which added greatly to its strength. This can still be traced, with trifling interruptions from sea to sea, even in places where the wall itself has now entirely disappeared; as for example in the fertile districts, where it has been removed on account of tillage. Owing to the moisture that collects upon the site of the ditch the grain springs in it with unusual luxuriance, or it is frequently kept in grass, while all about it is cultivated. Where it traverses a flat country, the material removed from the ditch is often piled upon its northern margin, so as to cause an additional obstruction to an enemy. On the other hand, where it would be of no service whatsoever, as along the edge of a cliff, it is occasionally omitted. A vast amount of labor has been expended in its excavation, where it had to be carried through a rocky soil. In

some spots enormous blocks of stone, one of them estimated to weigh not less than thirteen tons, lie just as they have been lifted out of it. In other places Hodgson tells us that "the earth taken out of it lies spread abroad to the north in lines, just as the workmen wheeled it out and left it. The tracks of their barrows, with a slight mound on each side, remain unaltered in form" (p. 276). The nicety with which the ditch was sloped seems to have varied with different overseers. Sometimes it is as smooth as a modern railway cutting, again it exhibits evident marks of haste and carelessness. Its size in several places is still very considerable; in one it measures forty feet across the top, and fourteen across the bottom, and it is ten feet deep; in another, reckoning from the top of the mound on the northern side, it has a depth of twenty feet.

So much for the mode of construction of the stone wall, or murus, the first and most striking of the three parts, which constitute the system of defences. The second, as before stated, consisted of an earth wall, or vallum, running always south of the murus, and made up of three ramparts and a ditch. One of these ramparts is placed close upon the southern edge of the ditch; the other two, of larger dimensions, stand one to the north and the other to the south of the ditch, and at a distance of about twenty-four feet apart. Even at the



present time the mounds of the vallum sometimes rise six or seven feet above the level of the adjacent country.

They are composed of earth mingled not unfrequently with masses of stone, which occasionally preponderates to such an extent as to supply ready material for the construction of dikes. There is every reason for supposing from the accounts given by the ancient writers of the Roman method of constructing earth-works that these mounds were originally strengthened by the addition of a palisade of wooden stakes. The ditch was similar in character to that of the murus, only to judge from present appearances, its dimensions must have been somewhat less. Its usual depth is about seven feet below the natural level of the soil; so that, as Dr. Bruce tells us, he has seen, while travelling along the highway in its vicinity, a ploughman and his team entirely disappear in descending into it. Like the ditch of the murus it has frequently been cut through beds of stone. Although the distance between the murus and the vallum frequently varies, the lines of the vallum maintain nearly the same relative position to each other throughout their entire course. These lines have become nearly obliterated, in those places where the plough has been wont for so many ages to draw its furrows across them; but in the grass-lands they are still distinctly marked for miles together; and where they have enjoyed the protection of being planted over with trees, they are still better preserved.

The *third* portion of the system of defences, and an equally important one, was made up of structures designed for the accommodation of the troops that manned the lines, and of roads over which they and their stores might be transported. These erections were of three kinds, permanent camps, or stations,

mile-castles, and turrets. The last two will require only a few words of explanation; but the stations were of very great importance, and need to be described at greater length.

They were ranged along the line of the works, at an average distance apart of about four miles, and were adapted for the residence of the commanding officer of the district and to provide secure and comfortable quarters for a strong body of troops. Like all Roman camps, they are quadrangular in shape, and comprise an area of from three acres to nearly six in the case of the largest. They are usually placed upon ground sloping to the south, and abundantly supplied with water. A stone wall some five feet in thickness surrounded them, and they were provided with a gateway upon each side. In all but three instances the murus, when not coinciding with the northern wall of the station, comes up against the north side of the east and west gateways. In the same manner the vallum approaches close to the southern wall of the station, or comes up to the south side of the gates. Main streets intersect the stations, proceeding from the four gateways, and crossing each other at right angles; and there were also minor streets, parallel to the others, but narrower. The abundant ruins outside the walls indicate that extensive suburbs were required for the accommodation of the camp-followers; in many instances these seem to have developed into small towns. But it is evident that the stations were constructed with exclusive reference to defence; and no indications of luxury, like the fine mosaic pavements so common in ruins of Roman villas, found in the south and west of Eng-

land, have ever been discovered in the region of the wall.

In ascertaining the number of these stations, and the designations under which they were known to the Romans, a document which has come down to our own times from those of the Roman occupation of Britain, has proved to be of the greatest service. It is styled, "*Notitia Dignitatum*," that is, a register of the several military and civil officers and magistrates, both of the eastern and of the western empires, with the names of the different places where they were stationed. Dr. Bruce calls this the army-list of the Roman Empire, but Guizot more properly compares it to a modern red-book, or court almanac, with the single difference that the red-book gives the names of the persons in office, while the *Notitia* mentions only the offices. It is believed to have been compiled about the end of the reign of Theodosius the First; in the opinion of the historian Gibbon, "between the final division of the empire (A. D. 395), and the successful invasion of Gaul by the Barbarians, (A. D. 407)." * In that chapter of the *Notitia* which gives an account of the military establishment of Britain there is a list of the prefects and tribunes under the command of the Honorable, the Duke of Britain. That portion of the British section, with which we are at present concerned, bears the heading, "Also along the line of the wall," and contains a list of the stations connected with it, twenty-three in number.† However, as there is no

* *Decline and Fall of the Roman Empire*, chap. xvii.

† "*Notitia Dignitatum*," Ed. Böcking, c. xxxviii; vol. ii. p. 113*; "Item per lineam valli. Tribunus Cohortis Quartæ Lingonum Segeduno; Tribunus Cohortis Primæ Cornoviorum Ponte Æli; Præfectus Alæ Primæ Asturum Conderco;

statement that they are actually upon the rampart, or that they are recited in the order of their position, or whether the enumeration is from the east to the west or *vice versa*, the early English antiquaries had no clue by which to identify them, except the fallacious one of the similarity of the ancient names to modern ones, and all of their guesses have turned out to be wrong. But the first twelve stations mentioned in the Notitia have been accurately determined by means of inscriptions found in their ruins; for in the Notitia with each station the designation of the battalion attached to it is given. We are thus enabled to identify numerous localities with absolute certainty, to ascertain the order in which they were enumerated, and hence to determine with confidence other places in the series.

A very careful and costly survey has been made by Mr. McLaughlan for the Duke of Northumberland of the whole line of the wall; and from it an admirable map has been compiled, on which the position of the stations is laid down.

Segedunum, the *first* station named, we can have no doubt was Wallsend, at the eastern extremity, and not

Tribunus Cohortis Primæ Trixagorum Vindobala; Præfectus Alæ Savinianæ Hunno; Præfectus Alæ Secundæ Asturum Cilurno; Tribunus Cohortis Primæ Batavorum Procolitia; Tribunus Cohortis Primæ Tungrorum Borcovo; Tribunus Cohortis Quartæ Gallorum Vindolana; Tribunus Cohortis Primæ Asturum Æsica; Tribunus Cohortis Secundæ Dalmatiorum Magnis; Tribunus Cohortis Primæ Æliæ Dacorum Amboglanna; Præfectus Alæ Petrianæ Petrianis; Præfectus Numeri Maurorum Aurelianorum Aballaba; Tribunus Cohortis Secundæ Lingonum Congavata; Tribunus Cohortis Primæ Hispanorum Axeloduno; Tribunus Cohortis Secundæ Thracum Gabrosenti; Tribunus Cohortis Primæ Æliæ Classicæ Tunnocelo; Tribunus Cohortis Primæ Morinorum Glannibanta; Tribunus Cohortis Tertie Nerviorum Alione; Cuneus Armaturarum Bremetenraco; Præfectus Alæ Primæ Herculeæ Olenaco; Tribunus Cohortis Sextæ Nerviorum Virosido."

Bowness, at the western, because here was found an altar, dedicated to Jupiter by the prefect of the fourth cohort of Lingones, which the Notitia tells us, was stationed at that place. Pons Ælii, the *second* station, must have been at Newcastle-upon-Tyne. Numerous coins of Ælius Hadrianus have been found there, and the easternmost of three Roman roads leading to Scotland, crossed the Tyne there by a bridge, the abutments of which have been seen in recent times.

Condercum, the *third* station, the Notitia tells us was guarded by the first troop of Asturians (from Spain), and a stone so inscribed was discovered at Benwell. Vindobala, the *fourth*, and Hunnum, the *fifth*, can only be identified by their position between Condercum, (Benwell) and Cilernum (or Chesters), the *sixth*. For at Chesters, on the north Tyne, several slabs have been found bearing the name of the second troop of the Asturians, which according to the Notitia was stationed at Cilernum. We have the same kind of evidence that Procolitia, the *seventh*, with its first cohort of Batavians, was at Carrawburg, and that Borcovicus, the *eighth*, the camp of the first cohort of Tungrians, was at Housesteads. All of these stations are upon the actual line of the wall; but Vindolana, where the fourth cohort of Gauls was placed, the *ninth* station of the Notitia, is shown by inscriptions found there to have been at Chesterholm, which lies more than a mile to the south of the rampart; Æsica, the *tenth*, is Great Chesters, where a cohort of the Asturians was stationed; and Magnæ, the *eleventh*, where was the second cohort of Dalmatians, is proved by the evidence of another altar to have been Carvoran. Amboglanna, the *twelfth*, as is

shown by an inscription recording the presence there of the first cohort of the Dacians, must have been at Birdoswald, where it was found.

In this way the ancient designations of the first twelve stations on the line from Segedunum (Wallsend) to Amboglanna (Birdoswald) have been accurately ascertained; but westward from that point no evidence from inscriptions has been discovered to identify another station. The fertile character of the country between the Irthing and the Solway has stood in the way of the preservation both of the wall itself and of any antiquities connected with it. Stone is scarce there, and the materials of the wall and the stations have been consumed in the construction of houses, fences and dykes. Besides, the superstitious inhabitants have looked upon all stones bearing inscriptions as unlucky, calling them "witch-stones," which hindered the butter from coming, and wrought other mischief. This could only be prevented by pounding them in pieces. Up to the present time, accordingly, the identification of the last eleven stations of the *Notitia* has continued to be a matter of much uncertainty, and antiquaries differ greatly in regard to them. Carlisle, which, all agree, represents the ancient *Luguwallum*, is not mentioned among the stations along the line of the wall. It is plainly identified, however, in one of the so-called *Itineraries*, or lists of roads, stations and distances, over the whole extent of the Roman Empire, three of which have come down to us from the fourth century. In the *Antonine Itinerary*, in which the names and distances from each other of the towns and stations along the principal military roads in Britain are put down, one

route is given as that from London to Luguwallum on the Wall. * Probably the reason it was not put into the Notitia was that it was so strong a place that a fixed garrison was not required there. The names of all these numerous stations, which must have been household words in the days of the Roman occupation, have been almost completely obliterated from the local vocabulary. The reason is that the choice of their situation was dictated solely by military and not by commercial necessities. The only exceptions to be found, according to the opinion of Dr. Beddoes, are Magnæ (or Carvoran), which word seems to be a Celtic translation of the Latin "Great Town;" and Carlisle, (the Welsh *Caer-luel*), in which instance the Roman Luguwallum sounds like the Welsh word Latinized. † These places, many of which were for centuries the abodes of busy men, resounding with the hum of multitudes and the clash of arms, now present a scene of utter desolation. Their long occupation, however, has given to their sites a degree of fertility, which they will never lose; and their débris is even now regarded as the best possible fertilizer. Wherever the soil is turned up, fragments of Roman pottery, bones of animals, horns of deer, and other imperishable articles are universally to be found.

Of the different Roman Legions, which were at various times employed for the conquest of Britain, three were at one period or another stationed at the wall, and all of these have left upon it written memorials of themselves. They were the Second (called the Aug-

* A full account of the British Itineraries may be found in Dr. Guest's "*Origines Celtice*," vol. ii., p. 101-118.

† *The Races of Britain*, p. 33.

ust), the Sixth (styled the Victorious, Pious and Faithful), and the Twentieth (whose appellative was Brave and Victorious).^{*} Accompanying them were bands of auxiliaries from the most distant quarters of the empire. Not less that eighteen different nationalities are represented among them. Gauls and Spaniards; Germans and Dacians; Thracians and Dalmatians, and even Moors, have all left their imperishable records. There is, however, scarcely a trace of Britons having been so employed; although we learn from the *Notitia* that a squadron of British horse was stationed in Egypt, a cohort of Britons in Armenia, Elder Britons in Illyricum, and Invincible Younger Britons in Spain. That these barbarian battalions continued to retain their distinct nationality seems to be indicated by the names that have been preserved of the deities they severally worshipped. There are Teutonic and Celtic divinities, such as Moguntis, Vitires, Balatucader, and Taraunus; or Eastern deities like Mithras and Astarte; as well as the more familiar representatives of the Roman Pantheon. But it is noticeable that troops belonging to the same nation were never placed in contiguous stations. Thus, for example, there were three corps of Asturians, (from Spain) stationed along the wall, but they were widely separated from each other by bands of Batavians,

^{*} The other legions serving in Britain were the ixth which was probably exterminated during a revolt of the Brigantes, having its place afterwards taken by the vith (Mommsen, "*Provinces of the Roman Empire*," vol. i., p. 204; Hubner, "*Inscrip. Brit. Lat.*," No. 241,) and the xivth, which was finally withdrawn from Britain (A. D. 70), by Vespasian, (Horsley, "*Britannia Romana*," B. i., Chap. vi., p. 82). Portions also of the viith, viiith, and xxind were brought over by Hadrian; of the viith no traces have been ever discovered in Britain; of the viiith a bronze boss of a shield is in possession of Canon Greenwell; and of the xxind a dubious relic is preserved at Abbotsford (Hubner, p. 100 and Nos. 495 and 846).

Germans and Gauls. In this way mutiny was rendered impracticable:

As regards the number of men required to garrison the wall only an approximate estimate can be made. Of the twenty-three stations fifteen were garrisoned by a cohort, which varied in its composition from six hundred to a thousand. A troop of cavalry, or *ala*, numbered three hundred; and as there were five *alæ*, with three other differently designated bodies of men, which are believed to have been of equal size with the *ala*, it may fairly be reckoned that the average strength of the garrison was from ten to fifteen thousand. Besides these the Sixth Legion, numbering six thousand men, had its headquarters at York (*Eburacum*), not much farther off than the length of the wall, with which it was connected by three excellent military roads.

I have already stated that in addition to the stations, mile-castles, so-called from their average distance apart, were placed, to protect the troops who guarded the contiguous stretch of the wall against sudden surprise. These were quadrangular buildings, usually measuring about sixty feet in each direction, and built against the southern face of the *murus*.

That they were constructed at the same time is evident from the resemblance of their masonry. Although they were usually at the same distance from each other, yet whenever the *murus* had to cross a river, or a mountain pass, we find a mile-castle placed conformably to guard the passage. They are provided with gateways, both on their northern and their southern sides, at least ten feet wide. As in all the stations and mile-castles, reckoned together, there must have been at least one

hundred gateways opening to the north, it is plain that the wall was not intended as a mere fence, but rather as a line of military operations, designed to overawe a foe whose assaults were chiefly to be expected from that quarter.

Turrets, or watch-towers, were the last of the different structures built along the line of the wall, to which I have alluded. Four were placed between each two mile-castles, and they were little more than strong stone sentry-boxes, about four yards square on the inside. They must have been quite within hailing distance of each other, but tradition has further reported that speaking-tubes were laid along the whole line of the wall for the purpose of rapidly conveying information. Thus the poet Drayton makes the wall declare :

“ Townes stood upon my length, where garrisons were laid
Their limits to defend ; and for my greater aid,
With turrets I was built, where sentinels were placed
To watch upon the Pict ; so me my makers graced
With hollow pipes of brasse ; along me still they went,
By which they in one fort still to another sent,
By speaking in the same, to tell them what to do,
And so from sea to sea could I be whispered through.”*

This singular tradition, doubtless, owes its rise to the lead pipes occasionally to be met with in the ruins of the stations, or to the earthen pipes, which are quite common there ; both of which were used for the purpose of conveying a supply of water. Hubner, however, quotes a singular statement, apparently corroborative of some such employment of speaking-tubes, from the historian, Dion Cassius (B. lxxiv., ch. 14), in which he tells about a similar provision of brazen pipes, used for the

* “ Poly-olbion,” by Michael Drayton : *The twenty-ninth Song*.

purpose of connecting the towers along the line of the wall of Byzantium.*

So much for the various structures of the great wall. But these arrangements were not enough; the barrier was also provided with its military roads, without which all the rest would have been useless. It might almost be said that the chief purpose of the murus and the vallum was to protect, and to conceal from view, as well upon the south as the north sides, the bodies of men that marched over the military road. This road is usually about seventeen feet wide (a breadth greater than that of the famous Appian Way a few miles outside of Rome), and it is substantially built after the well-known Roman fashion. In most places, where it still remains, it is now completely grass-grown, but it can easily be distinguished from the adjacent ground by the fineness of the herbage upon it. It runs from mile-castle to mile-castle, not always keeping close to the murus, but taking the easiest path between the required points. In the craggy portions of the central part of the island, where the murus shoots over the highest and steepest summits, the road winds a tortuous course, engineered from point to point by the easiest gradients, but still often with a very great degree of steepness. To avoid this rocky region, therefore, and thus to facilitate communication, an additional road was constructed, quite a distance south both of the murus and the vallum, following more nearly the course of the valley of the South Tyne. Much of this still remains, and is called at the present time *The Stanegate*. It ran from *Cilernum* (Chesters), to *Magnæ* (Carvoran); and even farther; that is, from a point above

* *Corpus Inscript. Lat.* Vol. vii., p. 104.

the junction of the North Tyne with the South Tyne, to the Irthing, one of the head waters of the Eden. Moreover, the wall was crossed by two great lines of communication, the Watling Street, and the Maiden Way, each having various subsidiary roads branching from it, by which, as I have already said, reinforcements could easily be forwarded from the great city of Eboracum (York).

These elaborate details in regard to the characteristics of the great Roman Wall in Britain, confirm what a recent visitor to it has well remarked, that it "required for its construction as least as much skill and labor as a modern railway through a wild and distant region. . . . The amount of transportation of materials with the small facilities at command, made the labor relatively, if not actually, greater; and the work of maintenance was of course much greater." *

The question now recurs who was the actual constructor of this elaborate and scientifically contrived system of fortifications. It has been assigned to different ages and to many individuals; but there are three principal hypotheses that have been maintained in regard to it. The old English chronicler, Gildas, writing about A. D. 560, and Nennius, in the eighth century, say that it was not built until towards the middle of the fifth century, after the Romans had abandoned possession of the island; and that it was constructed at that time by a legion sent back for this purpose for a brief period in answer to the importunate cries of the miserable inhabitants. This statement not only seems in itself highly improbable, under the prevailing conditions of the Roman empire at that

* "The Imperial Island," by James F. Hunnewell, p. 41.

date, but it lacks confirmation either from inscriptions or from coins. Nevertheless it was copied by Bede and the mediæval writers, and it has even colored the opinions of the older school of English antiquaries. The late lamented John Richard Green, however, repudiates it utterly. He first quotes the statement of a Byzantine historian that "in A. D. 410 a letter of the Emperor Honorius bade Britain provide for its own government and its own defence;"* then he adds: "Few statements are more false than those which picture the British provincials as cowards, or their struggle against the barbarian as a weak and unworthy one. Nowhere, in fact, through the whole circuit of the Roman world was so long and so desperate a resistance offered to the assailants of the empire. Unaided as she was left Britain held bravely out, as soon as the first panic was over, and for some thirty years after the withdrawal of the legions the free province maintained an equal struggle against her foes."†

The opinions of Gildas, however, have found a modern supporter in Dean Merivale, although he employs a considerable latitude in his interpretation of them. To quote his exact language: "Hadrian connected the camps of Agricola with a fosse and palisaded rampart of earth. . . . Severus, two generations later, may be supposed to have thrown up the second line of earthworks which runs parallel to those of Hadrian, and is evidently formed to support them; and finally the stupendous wall of solid masonry . . . running as an exterior bulwark a few yards to the northward from end to

* Zosimus, Lib. vi. (trans. of Löwenklau, Basel, 1576), p. 114.

† The Making of England. *Introduction*.

end, may be ascribed most probably neither to Hadrian, nor Severus, but to the age of Theodosius and Stilicho."*

A very different theory from this was elaborated by the great antiquary Horsley, to whom I have already referred, and it has been accepted by many standard historians, such as Gibbon, and his editor, Dean Milman, and very recently by Dr. Guest.† Horsley thought that most of the stations along the wall were built by Agricola, and that the northern mound of the vallum was his military way. The southern mounds of the vallum, with its ditch, he ascribed to Hadrian, whom he represents as taking for his military way the one which Agricola had constructed. The stone wall with its fosse and all its works, he ascribed to Severus. And there is even a variation upon this hypothesis suggested by Mr. Robson, the writer of the article, "*Vallum Romanum*," in Smith's "*Dictionary of Greek and Roman Geography*." He considers the stone wall to be the work of Hadrian, and the earthen rampart to have been built by Severus. But there is one fatal defect in Horsley's theory: it requires that Hadrian in constructing his wall should have rested satisfied with a military way that lay completely open to the enemy upon the exposed side of the north.

The theory, however, which is most widely known, and has been most generally accepted by modern antiquaries and by recent historians, such as Mommsen and Hubner, Green, Elton,‡ and Scarth,§ is what

* *History of the Romans under the Empire*, Chap. lxvi. (Am. ed., vol. vii., p. 348).

† *Origines Celticæ*, vol. ii., p. 90.

‡ *Origins of English History*, pp. 324-326.

§ *Roman Britain*, pp. 73-82.

is called the "Ælian hypothesis." This regards the murus and vallum as forming one system of fortification, as I have endeavored to show, and attributes their construction to the Emperor Publius Ælius Hadrianus, about A. D. 120.

This view was first propounded by Hodgson, the historian of Northumberland, a life-long and devoted student of the question, in opposition to the opinion of Stukeley, who thought all the works were constructed by Severus. But it has found its most persistent and strenuous advocate in another scholar who has devoted even more time to the question than Hodgson. I refer of course to Rev. Dr. John Collingwood Bruce, to whose sumptuous volume entitled "*The Roman Wall*" I have already acknowledged my indebtedness. He has been sustained by the antiquaries of Northumberland, despite the clamors of those of Cumberland, who have generally maintained the Severus theory.

It now only remains for me to consider in a few words the several arguments in favor of the Ælian and against the Severus hypothesis, so far as they rest upon the very scanty notices to be found bearing upon the question in the Latin and Greek writers.

The earliest authorities who make any mention of a wall in Britain are Dion Cassius,* and Herodianus.† Both wrote in the Greek language; both were contemporaries of Severus, and both give an account of his expedition into that country (A. D. 208); for which, in fact, Dion Cassius is the principal authority. If, therefore, Severus built the wall, we should certainly

* Dion Cassius, lxxii., 8; lxxvi., 12.

† Herodianus, iii., 14.

expect them to have spoken of it. As they do not, the inference is that it was a well-known object, when Severus landed in Britain. The next writer who has anything to say upon the subject is Spartianus, who composed lives of several of the emperors, about the end of the third, or the beginning of the fourth century, long after the events he described. In the life of Hadrian he merely says "he went to Britain . . . and there first drew a wall (murum) eighty miles in length, in order to divide the barbarians from the Romans."* In his life of Severus he relates that "he secured Britain, which is the chief glory of his reign, by a wall (muro) drawn across the island to the boundary of the ocean on either side."† It is upon this passage that the advocates of the Severus theory mainly rest their case; but the advocates of the Ælian hypothesis explain it in two ways. Some believe that Spartianus refers to the wall in Scotland, of which I have already spoken, built some sixty or seventy years before Hadrian's time by Lollius Urbicus, legate of Antoninus Pius; others think that Spartianus, writing so many years after the event, owing to lapse of time and distance from the locality, was misinformed and reports Severus as having built a wall, whereas in fact he only made repairs upon one already in existence, built by Hadrian. Subsequent writers, it is true, who lived long afterwards, ascribe the wall to Severus; but the silence of his contemporaries seems to be much more significant.‡

* Spartianus, "Vit. Hadriani," 11.

† Idem, "Vit. Severi," 18; cf. 22.

‡ Eusebius, ap. Hieron. Chron. (Migne. Patrol. Lat. tom. xxxiii. p. 638); Aurelius Victor, "De Cæsaribus," xx; Idem, "Epitome," xx; Eutropius, viii., 19; Orosius, vii., 17; Cassiodorus, p. 640 (Ed. Mommsen).

Gildas and Nennius derived their ideas from these late writers in regard to the condition of Britain at the time of the withdrawal of the Romans; but it must be borne in mind that Nennius in giving the native traditions puts the wall, which he says was built by Severus, between the Forth and the Clyde and not in England. Tradition seems to have handed down not only the name of Severus but the recollection of his severe discipline, his decision of character, his "incredible labors in cutting down woods, levelling hills, making marshes passable and constructing bridges," which Dion Cassius relates, as well as of his immense losses of men, "not less than fifty thousand perishing." Tradition would even have it that three hills near York, where he died, which are actually remains of an ancient glacial moraine, were mounds raised by his troops to celebrate his funeral rites; and to this day they go by the name of Severus' Hills. Such an immortality of fame seems almost like the lurid glow illuminating the memory of Nero in the minds of the peasantry of the Roman Campagna, and it has found an echo in the verses of Spenser, in his celebrated description of the English rivers:

"Next these came Tyne, along whose stony banks
The Roman monarch built a brazen wall,
Which mote the feeble Britons strongly flank
Against the Picts, that swarmed over all;
Which yet thereof Gaulsever they do call." *

But as Severus was only in Britain three years altogether, the question may fairly be asked what opportunity could he have had for constructing such an enormous work. Surely he would have had no reason for

* The Fairy Queen, Book iv., Canto xi., st. 36.

doing this before his expedition into Scotland, in which he purposed to completely crush the northern barbarians; and there was not time enough for it between his return and his death.

But on the other hand, when we turn to the wall itself and the autograph statements its builders have left upon it, we read a very different story from what tradition has told. If Severus was the builder, we should expect to find frequent intimations of the fact in the stations and mile-castles, its most conspicuous elements. But the truth is that from Wallsend to Bowness we do not find, in the stations upon the line of the murus, a single inscription which belongs to his reign; while at Procolitia, Vindolana, Æsica, Magnæ, and at the station near Walton House, we meet with them commemorating Hadrian. So, too, the mile-castles, which are essential parts of the murus, but have no immediate connection with the vallum, bear similar testimony. Not one of them has yielded an inscription to Severus; while, on the other hand, five have supplied dedications to Hadrian. What is most significant is the circumstance that four of these mile-castles stand upon a part of line farthest removed from the vallum, and lying at a much higher elevation. This negatives the supposition that they could have been brought from the vallum; upon the theory that it only was the work of Hadrian. It is true that in three of the supporting stations, which are removed by a considerable distance from the line of the wall, memorials of Severus have been found, as well as in two ancient quarries. But when we make a comparison with the number of inscriptions that have been found in connection with the wall in Scotland, bearing the name of its builder, Antoninus

Pius, the fewness of those found near the lower isthmus, containing the name of Severus, would seem to preclude the possibility of his being its constructor. It is highly probable that Severus, before setting out upon his expedition into Scotland, would put the stations upon his line of march in good condition, and would make needed repairs along the line of the wall; and for this purpose he would naturally resort to the same quarries which had been worked by Hadrian. But in the very act of quarrying his workmen would necessarily remove the traces of their predecessors; so that quarry-marks in general seem to be of but little avail in determining the question of who was the builder. One discovery, however, made in an ancient quarry, does throw a great deal of light upon the question, and points conclusively to Hadrian. I refer to what is known as the *Thorngraston Find* of ancient coins. During the construction of the railway from Newcastle to Carlisle, in 1837, there was discovered near the station of Borcovicus (Housesteads), about half a mile south of the line, in an old quarry, buried amongst the chips of stone, a peculiarly shaped bronze vessel, somewhat like a skiff in form. This contained three imperial gold coins, wrapped up in a piece of leather, together with sixty silver denarii. The quarry had not been touched since the time the purse was deposited in it. Now as the coins bearing the latest date, all of which are unworn by circulation, belong to the reign of Hadrian, the conclusion seems to be irresistible that the Romans ceased to resort to the quarry during his reign.

In justice to the memory of the great Horsley, it ought to be borne in mind that all of this great amount of evidence from inscriptions has been discovered sub-

sequently to his time. He knew of only a single doubtful inscription bearing the name of Hadrian. Finally, we must remember that the erecting of such a monumental structure as is the wall is entirely in accord with the character of Hadrian. He was a great builder, as numerous works, in different parts of the empire, among them the well-known Castle of St. Angelo, at Rome, bear witness to this day. We may therefore conclude, I think, that the great Roman Wall in Britain may safely be called THE WALL OF HADRIAN.

For almost one-third of its entire length, from Wall-send to the North Tyne, there are only scanty remains left of it to be seen now. If the traveller chooses to take a long drive out of Newcastle, sixteen miles due west, over General Wade's excellent road, which I have already referred to, he will come to the spot where the old Roman road, The Watling Street, or, as it is less euphoniously denominated in the neighborhood, The Devil's Causeway, crosses the line of the wall. Before reaching it, however, as he approaches Halton, in the neighborhood of Hannum, the *fifth* station on the line, of the Notitia, he will see at Down Hill one of the most striking examples of the vallum anywhere remaining. Close to this station, in the year 1850, a stone was found bearing the inscription, *Fulgur Divom*, "the lightning of the Gods." It was the ancient belief that those who were struck dead by lightning had suffered under the special visitation of the gods, and they were buried upon the spot where they fell. Several examples of this same inscription have been found in different parts of Europe where they are preserved in the museums at Florence, Nîmes, Palermo, and elsewhere. The one to which I

am now referring may be seen in the museum at Newcastle.*

By far the most important portion, however, that still remains of these remarkable works is that extending for a distance of twenty-one miles, from Chesters (Cilernum), on the North Tyne, to Birdoswald (Amboglanna), on the Irthing, a branch of the Eden; and to this I shall confine my description of what can now be seen of them.

If only a single day can be devoted to exploration, it will be well for the traveller to take an early train from Newcastle by the Northern Counties Railway, for the station at Chollerford, twenty-four miles distant. Upon leaving the station he will find on the bank of the river, about a quarter of a mile below, one of the most remarkable remains of the wall which time and violence have spared. I refer to the abutments and piers of the Roman bridge, which once carried the military way across the North Tyne to Cilernum, the *sixth* station. The murus, still standing eight feet high, reaches the brink of the river and there terminates in a square building, in front of which is the eastern abutment of the bridge. After this had lain buried for ages under beds of sand and gravel, through a change in the course of the river to the westward in 1860, the bank was left in such a situation that the remains could be excavated and thoroughly explored by Mr. Clayton.

On the opposite side of the river stands the fine park and mansion of Chesters, Mr. Clayton's residence, where what remains of Cilernum can be seen. This gentleman is the owner of three of the principal stations, Cilernum, Borcovicus, and Vindolana, and of a large extent of the

* "The Celt, the Roman, and the Saxon," by Thomas Wright, p. 389.

wall itself. He has taken unwearied pains, and expended large sums of money in the exploration and preservation of its antiquities. These are worthily displayed in the noble portico added to the house for that purpose, not long ago. The traveller must not linger too long, however, over the relics of Cilernum, and over the ancient Roman cemetery, with its sepulchral slabs, near the river's side, but had better take horses at once and drive due west ten miles along the line of the wall to Housesteads Farm, the site of Borcovicus. For some miles his course will be over General Wade's road in long straight reaches up hill and down, the stones of the murus distinctly visible in its surface. After passing Walwick and ascending the long hill on which stands the old Taye Tower, all the lines of the barrier come grandly into view, running in apparent parallelism with each other. Here the road takes to the north bank of the vallum, and a great stretch of the wall appears on the right; and before long the hill called the Limestone Bank is reached. This is some eight hundred feet above the level of the sea, and, commands a distant view of the Cheviot Hills. Here for the first time he will meet with distinct traces of the ancient military way, although it is not that, but the ditches, both of the murus and the vallum, which form the most remarkable features of this spot. Where they cross the crown of the hill, they have been excavated in the basaltic formation with enormous labor. The huge blocks lie about just as they were left by the workmen, and it is not easy to conceive how such enormous masses could have been extracted without the help of gunpowder. Hence onward the road stretches westward in a long dip over

Tepper Moor, with the vallum running by its side, and presenting here one of its most striking displays still to be seen. Soon the traveller arrives at the low and grass-grown relics of Procolitia (Carrawburg), the *seventh* station, about three and a half miles distant from Ciler-num. This station comprised an area as large as three and a half acres, but, as the greater part of it is still unexplored, little else appears than the gateways, which are readily discerned. The murus forms its northern wall, and the vallum comes up on each side to the defense of the east and west gateways. Leaving Carrawburg, he soon reaches Carraw, once a rural retreat for the monks of Hexham, which lies some seven or eight miles away to the south-east. Here the traveller leaves the cultivated land for the wild moorland, stretching away to the north in great green waves. The murus directs its course to the precipitous ridge of the highest of these, while the vallum seeks the bottom of the long and broken hill, half way up which stands a stone-built farmhouse, called Sewingshields, or "the cottage by the fosse."

Just north of the wall here once stood the noted mediæval strong-hold built for protection against the moss-troopers, called Sewingshields Castle. This is the place referred to by Scott, in the sixth canto of "Harold, the Dauntless," under the name of "The Castle of the Seven Shields;" but as the poet sings, now :

"no towers are seen
On the wild heath, but those that Fancy builds ;
And save a fosse that tracks the moor with green
Is naught remains to tell of what may there have been."

But though its last material relics were removed

several years ago by the proprietor, tradition has much to tell about the marvels of this spot. King Arthur and Queen Guinevere, with all their court, here sleep enchanted in a chamber underground, never to come forth until their deliverer shall blow the bugle horn, placed on a table at the entrance, and then, with "the sword of stone" lying by its side, shall cut the garter also lying there. No one had ever heard where was the entrance to this enchanted hall, when one day a shepherd sitting knitting among the ruins, happened to drop his ball, which rolled down a deep, subterranean passage. Following up the clue, he penetrated to the chamber, and by the light of a fire that streamed up from a crevice in the floor, he beheld the king and queen, and all the company of sleepers. Grasping the sword, he drew it from its scabbard; the eyes of all the company opened and they rose upright. Then the shepherd cut the garter, but forgot to blow the horn; whereupon the spell resumed its power, and the king sank back to sleep, exclaiming:

"O woe betide that evil day
On which this luckless wight was born,
Who drew the sword, the garter cut,
But never blew the bugle horn."

As was natural, terror brought loss of memory, and the unfortunate shepherd never afterwards was able to find the entrance to the enchanted chamber.

As the traveller proceeds on his westward course, he descends into a broad, basin-like recess in the ridge, called Busy Gap, a pass chiefly frequented by the moss-troopers and marauders of the olden time. A Busy Gap rogue was a term of reproach as late as the close of the

seventeenth century. When Camden and Cotton visited the wall, they did not dare to venture into this neighborhood "for the rank robbers thereabouts." The only peril to which the pedestrian is now exposed in this secluded region is of encountering some savage bullock, as he crosses the wide fields.

At the top of the slope, about a third of a mile from the road, stands Borcovicus, the *eighth* station, about five miles distant from the last. Here at the lonely farmhouse, called Housesteads, it will be well for the traveller to dismiss his carriage, and for the remainder of his pilgrimage to trust to his own resources. It is a fine walk, of some eight miles, over the hills, and for quite a distance along the wall itself to Caw Gap, and thence across the fields to Haltwhistle station, where the train may be taken back to Newcastle.

Far around lies a vast and striking solitude, above which rise the gray and lichen-clad walls of one of the largest stations, five acres in extent, and certainly the most interesting one still remaining. The English antiquaries find words fail them in attempting to describe its wonders. Stukeley, in 1725, called it "the Tadmor of Britain"; and Dr. Bruce claims that parts of it "present a spectacle, which even those who have visited the Italian Pompeii will not despise." All the gateways are excellently preserved, but the western is the most complete. In every sense this gateway has been a double one; two walls have to be passed before the camp is entered; each was provided with two portals; and each of the outside portals was supplied with two-leaved gates. In the middle was a strong gate-post, against which the leaves closed; and on each side was a guard-

chamber for the sentries. The northern one is still standing, fourteen courses high, and only requiring a roof to make it habitable. It was heated by a flue running round the sides under the floor. The projecting stones of both jambs are worn in such a fashion as to suggest that they were used by the idle soldiers to whet their swords upon. To give some conception of the labor and cost of the excavations made here by Mr. Clayton, we are told that, when he began, not a stone of this gateway was to be seen, and the surface was covered with a turf of unusual luxuriance. The same was the case with all the rest of the station. The opposite gateway, on the east, was discovered to have been anciently walled up, and on the floor was found a cart-load of mineral coal. There is no doubt that the Romans made use of such coal, when beds of it occurred in the vicinity. An ancient colliery worked by them in the neighborhood of Benwell (Condercum), the *third* station, has been explored by Dr. Bruce. The seam of coal there was two feet thick, and shafts had been sunk to the depth of between twelve or fifteen feet. So, too, at Habitancum (Risingham), the first station north of the wall, on the Watling Street, there was discovered a bath with a furnace and more than a cart-load of coal.

The southern gateway is of an unusually massive character, and shows traces of having been appropriated by some moss-trooper for his home. The shed in which he secured his cattle at night; the kiln in which he dried his half-ripened grain; and some of the steps by which he climbed to his little fortress over the cattle-shed may still be made out.

One of the most interesting features to be noticed at

the gateways is the pivot-holes, where the double gates swung, and the grooves worn into the thresholds by the wheels of the passing chariots.

Two principal streets ran from north to south through the interior, now one mass of desolation, and these were intersected by one running transversely from east to west. In the northern section of the middle division are remains of large buildings; one is 78 feet by 18; another, to the south, is even larger, 147 feet by 30. From certain differences in the character of the masonry this is believed by Dr. Bruce to date from the time of Severus. In two spots the station walls have been made wider by building an interior wall and filling up the intervening space with stones bedded in clay, so as to make a solid platform of masonry twenty feet wide. Undoubtedly these were intended for platforms, on which to plant a ballista, or engine for throwing heavy missiles (the artillery of Roman times), as several stones, weighing a hundred pounds or more, and roughly cut into a round or conical shape, were found lying near it. Two inscriptions, recording the construction of similar ballisteria, together with several stones of the same shape, have been discovered in the course of excavations made by the Duke of Northumberland at High Rochester (Bremenium), the second station north of the wall on the Watling Street. Josephus, in his account of the siege of Jerusalem, has given some remarkable instances of the destructive force of the ballista, which threw stones to the distance of a quarter of a mile.*

Outside the station walls, both on the south and the

* Wars of the Jews, Book iii., chap. vii., 23.

east, are remains of numerous buildings attached to it. In 1856 there was discovered on the east side a carefully guarded passage through the wall, giving access to a little amphitheatre, constructed on the north side. It is about a hundred feet in diameter and ten feet deep and was intended for the sports of the garrison.

The numerous altars, bas-reliefs, statues and inscriptions that once excited the admiration of visitors, lying about exposed to constant depredation and the wear of the elements, have all been removed for safety either to Mr. Clayton's museum at Chesters, or to that at Newcastle, or the one at Alnwick Castle.

From Borcovicus, westward, a long reach of wall extends to Rapishaw Gap. On the way the traveller will pass one of the finest of the mile-castles along the whole line, with its wall still standing in fourteen courses, to the height of nine feet and a half. Here is, perhaps, the most picturesque scenery to be found in the whole walk. The cliffs rise with long and moderate slopes to the south, but dropping abruptly away to the north, so as to present a formidable barrier in that direction. The murus is to be seen in its full perfection and grandeur, running from hill to hill and cresting the crags. On the right lie the dark blue loughs of Northumberland, sleeping in the hollows of the moorland; on the left is a magnificent view over the valley of the Tyne to Skiddaw and the hills of Cumberland. For a long distance the path has lain along the top of the broken and dismantled wall. After dropping into the gap, it ascends and crossing a long ridge, commanding an extensive view, it comes to a neat little farmhouse, called the Hot Bank, the home of the ancient family of the

Armstrongs, situated in a hollow called the Milking Gap.

One mile due south of Milking Gap, lies Chesterholm, the Vindolana of the Notitia, and the *ninth* in the line. Here for the first time we meet with a station lying south of both lines of the barrier ; others, so situated, occur to the westward, but in no instance so far removed from it as this. The vallum here is at its maximum distance from the murus, sweeping away from it in two curves, south of the vallum. Vindolana stands upon the direct line of the Stanegate, the military way leading from Chesters (Cilernum) to Carvoran (Magnæ), and as it commands the important defile which gives access to the valley of the South Tyne, it may well have been a fortress, previously planted here by Agricola. This station has been for time immemorial the common quarry of the farm here, and of all the neighborhood, so that but little remains of it, although many altars and inscriptions have been found in it. But the most interesting relic connected with it is the Roman mile-stone, standing near the northeastern angle of the station, on the very spot where Roman hands planted it at least seventeen centuries ago. The pillar is six feet high, and one foot ten inches in diameter. Traces of an inscription are visible on its western face, but only a letter or two can be made out. It is the only Roman mile-stone in England, still occupying the position where it was originally placed.

Rejoining the wall at Milking Gap, and continuing his course westward, the traveller soon reaches another striking gap, where on mounting the hill he finds the rubble-built core of the wall very conspicuous, as it shoots

due north in order to seize the extreme edge of the cliff. Descending again he comes to still another gap, in which is a very fine specimen of a mile-castle, which was excavated by Mr. Clayton in 1854, and gives the name of Castle-Nick to the locality.*

The walls of this mile-castle are in an excellent state of preservation, seven feet thick, and about five feet high. Its interior dimensions are sixty-two feet from north to south, by fifty from east to west; and the foundations of the structures originally standing inside of it are still visible. The military way, in its immediate neighborhood, is very clearly to be traced, twenty feet in width, and having both kerb-stones still in place.

Continuing on his way, the traveller soon reaches a minor depression in the steep and broken crags, called The Cat's Stairs, down which it will be best for him to scramble, and walk along the plain to the next opening, which goes by the name of Peel Crag Gap. As the defile here is wider than usual, with long and gentle slopes on each side, special precautions have been taken to guard it. On both sides of the pass the walls bend sharply to the south with the result of narrowing the gorge and exposing an enemy to a flanking fire, within half bow-shot on either hand. The great ridge of basalt here disappears for a space, and sandstone takes its place, up which on a long and moderate slope the wall stretches, till it reaches the summit, called Winshields Crags, one thousand feet above the sea level. In all directions is a most extensive view. On a clear day ships sailing on the Solway can easily be descried, and the hills of Dumfriesshire, sixty miles away due west, are in plain sight. To

* It is shown in the frontispiece, from "Bruce's Roman Wall," p. 226.

the south of west is seen the mountain group of the Lake District, with Skiddaw for its prominent feature. No towns or villages are in sight, and only a few scattered houses, not one of them near at hand. In the midst of this solitude and silence the great wall stretches far away to the west.

By a gentle descent the traveller comes to a gap of bold proportions upon which popular superstition has bestowed the ill-boding appellation of The Bogle Hole. This may perhaps be the very spot to which an eminent Byzantine historian of the sixth century refers : " In this isle of Britain men of ancient time built a long wall, cutting off a great portion of it ; for the soil and the men, and all other things are not alike on both sides. On the southern side there is wholesomeness of air in conformity with the seasons ; moderately warm in summer and cool in winter. Many men inhabit there, living much as other men. The trees with their appropriate fruits flourish in season ; the corn-fields are as productive as others, and the district appears to be sufficiently fertilized by streams. But on the northern side all is different, in so much indeed, that it would be impossible for a man to live there even half an hour. Vipers and serpents innumerable, with all kinds of wild beasts, infest that place ; and what is most strange the natives affirm that if any one passing the wall should proceed to the other side, he would die immediately, unable to endure the unwholesomeness of the atmosphere. They say also that the souls of men departed are always conducted to this place."*

The veracious historian goes on to tell a long story about the methods of this infernal transportation, which

* Procopius, *Bell. Goth.* iv. 20.

I will not quote, as I only wish to give a glimpse at the wholesome terrors the Scotch Highlanders had inspired in the sixth century in the purlieus of the imperial palace at Constantinople.

Leaving this spot, with its name of evil omen, the traveller soon comes to the defile, called Caw Gap, through which runs a modern highway leading northwards into Scotland. After passing this he comes to another mile-castle, which has also been excavated by Mr. Clayton, and found to closely resemble the one at Castle-nick. This goes by the name of Cawfields. Here the land becomes lower and more fertile, and as a consequence cultivation has brought with it the destruction of the stone work of the wall. But before the traveller has quite reached the spot here indicated, if he intends to take the train at Haltwhistle, he must leave the line of the wall and descend the long grassy slopes to the highway. On his way he will pass certain relics of the Age of Stone, two menhirs, locally called "The Mare and Foal," huge, rough, upright stones, similar to those found in many countries of western Europe.

This is as much of wall-exploration as a "well-girt" traveller can possibly accomplish in one day, that is to say from Chesters to Cawfields. The stretch of the wall westward as far as Birdoswald (Amboglanna) is equally well worth visiting, but to accomplish this most conveniently the traveller had better make his point of departure from the western side of the island instead of from Newcastle. He will find Gilsland Spa, a pretty little watering place in the picturesque valley of the Irthing, with its excellent hotel, "The Shaws," a most desirable headquarters for his excursions. Gilsland Spa was vis-

ited by Walter Scott in his youth more than once ; some of the scenes of Rob Roy are laid here ; and here he met his future wife, Miss Charpentier, after having undergone a previous flirtation, recalled by certain "Lines to a Lady, with flowers from the Roman Wall," scarcely good enough to bear quotation. The easiest way of reaching Gilsland Spa is by omnibus meeting the train at the Rosehill railway station, and from it excursions can readily be arranged.

The first one will be to the station of *Æsica* (Great Chesters), the *tenth* along the line of the wall, nearly six miles west of Housesteads. It stands in the open fields a little beyond Caw Gap, where the traveller has left the wall at the end of his previous exploration. Notwithstanding its name, it was one of the smallest stations, not exceeding three acres in extent. Of the *mur* once described as to be seen here, some twelve or thirteen feet in height, nothing now is left ; but the earth ramparts and ditch are clearly defined. The interesting feature, however, of this station is the aqueduct, by which it obtained its supply of water. The water course consists of a channel three or four feet deep, and proportionately wide, cut in the sides of numerous little hills on the north. To preserve the water level a most circuitous course was taken ; but so effectually has this been done, that we are told by Dr. Bruce it was only necessary to resort to a bridge, or embankment, once. This bridge does not now exist, but its site is indicated by the name Benk's Bridge. The whole length of the aqueduct is six miles, while the distance in a straight line is little more than two miles and a quarter ; and by it the water of Caw Burn is brought close to the station.

Hard by the vallum at the southwest are some prehistoric barrows; and still further south, near the Stanegate, is a group of Tumuli, which goes by the name of The Four Laws. Near Great Chesters the depression in the land comes to an end, and the crags of basalt again rise high with the murus ascending them. A very fine piece is to be seen here at a place called Cockmount Hill. To the westward of this small traces of the wall are visible until Walltown is passed, when the traveller comes to the towering serrated rocks, known as "The Nine Nicks of Thirlwall," the highest of which, Mucklebank Crag, is eight hundred and sixty feet above the level of the sea.

The wall here climbs and descends the little hills, clinging with its accustomed pertinacity to the rugged edges of the line of basalt. Several interesting sights are to be seen at Walltown. Near the wall is a spring, surrounded by masonry, called by the present inhabitants King Arthur's Well. An ancient tradition tells that here Paulinus baptized Ædwin, King of Northumbria. From the fact of its having been inclosed in so open and wild a country it must have been regarded as a place of historical importance and interest. Chives grow abundantly here in the crevices of the rocks, and the universal opinion would have it that they are a donation from the Romans, although I have read that they are indigenous in other parts of England. However this may be, Camden tells us, in the quaint version of old Philemon Holland: "There continueth a settled persuasion among a great part of the people thereabouts and the same received by tradition, that the Roman soldiers of the Marches did plant here everywhere in old time for their

use certain medicinal herbs for to cure wounds ; whence it is that some empiric practitioners of chirurgery, in Scotland, flock hither every year, at the beginning of summer, to gather such simples and wound-herbs, the virtues whereof they highly commend as found by long experience, and to be of singular efficacy."

After passing "The Nine Nicks of Thirlwall," the basaltic range, which has extended nearly unbroken from Sewingshields, sinks into the plain, and there comes a stretch of fertile, well-cultivated country, two miles wide or more, watered on the east by the little Tipalt, one of the head waters of the Tyne, and on the west by the Irthing, which runs into the Eden. In the defile through which the Tipalt passes stood Magnæ (Carvoran), the *eleventh* station of the Notitia. Here probably Agricola built a fort to guard the pass by which went the Maiden Way, the great Roman road, which runs up to Scotland, on the west side of the island. It has experienced the fate of other stations, placed in the fertile lowlands, and its remains have almost disappeared, notably within the last hundred years. Fortunately a large number of altars and inscriptions discovered here have been preserved, and have positively identified the spot. The lines of the barrier run parallel with each other, down to the banks of the little raging Tipalt, where stand the ruins of Thirlwall Castle, built entirely of stones taken from the murus. Here evidently was the weakest portion of the whole barrier, as it was far away from the strongly defended positions at both ends of it. Mediæval writers tell us that the wall was first "thirled" or broken through, in this vicinity by the northern enemy, and it is from this circum-

stance that the name of the castle is supposed to have been derived.

This would be the locality of the apocryphal ballad, which Robert Surtees pretended to have taken down from the recitation of an old woman, and which he imposed upon Walter Scott, who inserted the whole of it in "The Minstrelsy of the Scottish Border" (vol. ii., p. 26), after having interwoven the following stanza into Marmion (canto i. st. 13):

"The whiles a Northern harper rude
Chanted a rhyme of deadly feud;
How the fierce Thirlwalls and Riddleys all,
Stout Willimondswick,
And Hardriding Dick,
And Hughie of Hawdon, and Will o' the Wall,
Have set on Sir Albany Featherstonhaugh,
And taken his life at the Deadman's-shaw." *

Close adjoining Thirlwall Castle is Glenwhelt, about which Scott tells an anecdote to his friend Surtees, who had just played this sad trick upon him, which I will quote, as it has some bearing upon the present state of the wall. In a letter from Edinburgh, February 21, 1807, he writes: "Mr. Ritson, the eminent antiquary was very literal and precise in his own statements, and expecting you to be equally so, was much disgusted with any loose or inaccurate averment. . . . In the course of conversation we talked of The Roman Wall; and I was surprised to find that he had adopted on the authority of some person at Hexham a strong persuasion that its remains were nowhere apparent, at least not above a foot or two in height. I hastily assured him that this was so far from being true that I had myself seen a

* Memoir of Robert Surtees, by Geo. Taylor—(Surtees' Soc. ed. by Rame), pp. 25 and 237.

portion of it standing almost entire, high enough (for a fall from it) to break a man's neck. Of this Ritson took a formal memorandum, and having visited the place (Glenwhelt, near Gilsland), he wrote back to me . . . 'that he had seen the wall, that he really thought that a fall from it would break one's neck; at least it was so high as to render the experiment dangerous.' I immediately saw what a risk I had been in, for you may believe I had no idea of being taken quite so literally."*

At Wallsend the lines of both murus and vallum are still distinct, but there is not one stone of the wall left upon another. Westward of Wallsend the ditch is of unusually large dimensions, measuring thirty-four feet across the top, and nearly sixteen feet deep.

At the village of Gap, which is said to have received its name from the wall having been breached here, the vallum is very distinct, and stands upon higher ground than the murus. The earth-works are in good condition as far as to the banks of Poltross Burn, the boundary line between the counties of Northumberland and Cumberland, but no remains of the arch by which Camden says that the murus passed the brook are now to be seen. It shows itself again between here and the Irthing; but how it crossed and ascended the other side we have no means of knowing. The cliff here is constantly being undermined by the river, so that all traces of it must have disappeared long ago; but it reappears on the brink above.

There stood Amboglanna (Birdoswald), the *twelfth* and last identified station on the line. It occupies a position commanding and very beautiful, and naturally

* Memoir of Robert Surtees, by Geo. Taylor—(Surtees' Soc. ed. by Rame), p. 39.

strong, as the elevated bluff is surrounded on three sides by the Irthing and one of its little branches. It was the largest of all the stations, having an area of five and a half acres; half an acre larger than Housesteads (Bor-covicus). Its walls are in a good state of preservation and its gateways fine specimens of construction. The murus westward Dr. Bruce considers, taking account not only of the height but the length of the fragment, and the perfectness of its facing on both sides, to be the finest remaining specimen of this great structure.

Here the traveller's excursions will naturally come to an end, unless he feels inclined to take a long and beautiful drive by Lanercost Priory and Brampton to visit the celebrated Written Rock, of which I have previously spoken, on the banks of that pretty little Cumberland stream, the Gelt.

DEFINITIONS OF GEOGRAPHICAL NAMES
WITH INSTRUCTIONS FOR CORRECT
PRONUNCIATION, FOR THE VAR-
IOUS HIGHER SCHOOLS.

A SUPPLEMENT TO EVERY SCHOOL GEOGRAPHY.*

BY

KONRAD GANZENMÜLLER, Ph. D.

THE IBERIAN PENINSULA.

In the *Spanish* language the single *vowels* sound always as given on p. 516, JOURNAL, 1889: — *y*=*i* in marine. For the most part two joined vowels are to be pronounced a little separated: *Cape Créüs*, *Cape de la Náð*, *Düero*; — sometimes each one is sounded: *Balē-āres*, *Pity-ūsas*.

The *consonants* are much the same as in English, and every letter is pronounced; but

b between two vowels sounds like *v* (with which it is sometimes interchanged) as Cordoba, Cordova; Habana, Havana; in the beginning of a word it is to be pronounced as *b* (but very soft): *Bilbáð*, *Biscáya*.

c before consonants, and before *a*, *o* and *u* is like the English *c* before the same letters; but *c* before *e* and *i*, and *z* before *a*, *o* and *u* are pronounced by the Spaniards in Europe nearly like the English *th*. *Cimbre de Mul-*

* Continued from JOURNAL, 1889, pp. 516-525.

ahacén. Galiciã, Múrciã, Barcelóna, Palencia, Valenciã, Ivíza, Zaragóza.

g before consonants, and before *a*, *o* and *u*=*g* in girl: *Segúra, Segóviã.*

j (and *x*) and *g* before *e* and *i* sound like a "strongly aspirated *h*," as in the German word *máchen*: *Jeníl, Tájo, Jéres de la Frontera; Cartagéna.*

gu=*gw* (*ũ* very short), *qu*=*k*: *Sierra Gúadarráma, Gúadiána; Gúadalquivir.*

ll=*li* (in pavilion): *Mallórca, Sevilla, Valladolid.*

ñ=*ni* (in union): *Cataluña, La Coruña.*

h is mute: *Mahón, Alhámbrã.*

The names ending in a consonant are usually accented on the last syllable, and those ending in a vowel on the penultimate; but there are some exceptions: *Montserrat, Almadén, León, Madrid, San Sebastián, Santander, Cape Trafalgar, Manzanáres, Alcázar, Búrgos, Cádiz; Menórca, Cape Finisterra, Cape Tarifa, Sierra Moréna, Maladétta; Andórra, Estremadúra, La Máncha, Alicánte, Granáda, Pálma, Pamplóna, Salamánca, Santiágo, Tolédo, Córdova, Málaga.*

In *Portuguese* the vowels nearly always sound as in Italian and Spanish, and two joined vowels must be pronounced a little separated: *Bétta, Cõimbrã.*

c before consonants, and before *a*, *o* and *u* is like the English *c* before the same letters; but *c* before *e* and *i*, and *ç* before *a*, *o* and *u*=*s*: *Cíntra, the Açõres, Bragança.*

g before consonants and before *a*, *o* and *u*, *gu* before *e* and *i*=*g* (in girl); *qu*=*k*: *Serra Mantequétta.*

ch (and *x* as an initial letter)=*sh*; *j* (and *g* before *e* and *i*=*zh*): *Serra Monchique, Téjo.*

s at the end of a syllable sounds like *sh* : *Elvas, Lagos.*

lh=*li* (in pavilion) : *Villa-Velha de Rodão.*

nh=*ni* (in union) : *Minho* (in Spanish *Miño*).

Nasal sound *õ* (as in the French word : *postillon*) : *Cape São (são) Vicente* ;—*ã* (as in *Amiens*) : *Alem (alã), téjo.*

The *BÆTIS*, as its name was in antiquity, is now the *GUADALQUIVIR* (*Wadi-al-kebir*)=THE GREAT RIVER ;—*GUADALAVIAR* (*Wadi-al-abiad*)=THE WHITE RIVER. The *Guadiana* has its Greek and Roman name with the Arabic prefix ; (*Wadi-Anas*) THE RIVER ANAS.

ALGARVE (in the south of Portugal)=THE WESTERN LAND.

ALGESIRAS=THE PENINSULA (this city is so named from its situation).—*ALCÁNTARA*=THE BRIDGE (so called after the great bridge over the *Tagus*, built by the Roman Emperor *Trajan*) ;—*ALMADEN*=THE MINE ;—*ALCÁZAR* (in *Toledo* and in *Seville*)=THE PALACE.

The country of *CATALONIA* (formerly *Gothalunia*) takes its name after the *West-GOTHS*.—*CASTILE* was named after the CASTLES, erected by the inhabitants for their defence against the *Mauritanians*. Such castles were first built in the north, and then also in the south of the *Sierra Guadarrama* ; therefore *New-Castile* is situated southward from *Old-Castile*.—The name of the city of *BURGOS* is probably from the same root as German *Burg*, meaning a CASTLE.

FRANCE.

In *French* the single vowels *a, e, i, o* (without having a mark of accent), sound always like the same short vowels in *Italian* ;—see *JOURNAL*, vol. xxi, p. 516—*y*=*i* ; and

most *consonants* have the same sound as in English ; but *c* before *e* and *i*, *ç* before *a*, *o* and *u*=*ss* (sharp), otherwise *k*.—*ch*=*sh* (sharp) ; —*j*=*zh*, *g* before *e* and *i* has the same sound ; *g* before *a*, *o* and *u*, and *gu* before *e* and *i*=*g* in *girl* ; *qu*=*k* ; *v*=Latin *v*, German *w*.—*c*, *d*, *e*, *es*, *g*, *s*, *t*, *x* at the end of the syllables are mute, but often make the preceding vowel long : *Mis* (*mī*).

The *principal accent* is always on the *final syllable*.

Garonne (*garónn*), Marne, Rhone, Arles, Bayonne, Biarritz, Brest (*t* not mute), Cannes, Crécy, La Rochelle, Lille, Narbonne, Rochefort, Belfort (*béfór*, *l* mute).

ie is to be pronounced as a dissyllable (*cf.* *Triést*) : Allier (*r* mute), Guienne, Dieppe ; —*ou*=*ū* : Adour, Cherbourg, Toulouse, Tours, Boulevard ; *è*=*ē* : Sèvres ; —*ei*=*é* : Seine.

â=*ā*, *ê*=*ē*, *ô*=*ō* : Havre de Grâce ; —Angoulême ; *ê* is also expressed by *ai* : Calais (*kalē*), Epernay ; Aix (*ëks*, *x* not mute) ; —Saône (*sōn*) ; —*au* and *eau* have, likewise, the sound of *ō* : Dauphiné, Bordeaux ; —*u*=*ū* (German *ü* in Müller, French *u* in *parapluie*) : Canal du Midi, Bar-le-Duc, Lunéville ; —*oi*=*ōā*, *ōă* : Loire, Poitiers (*rs* mute).

ll was formerly sounded like the Spanish *ll* (*li*), but according to the modern pronunciation *l* is not sounded at all in such words : Bouillon (formerly *bulyō*, is now *buyō*)—Versailles (*versāy*), Marseilles (*marsēy*) ; *ng*=*ni* (as in the Italian Legnano) : Cognac, Auvergne (*ōvērnŷ*), Bretagne, Gascogne, Boulogne.

The baptismal name of Jean (John) sounds in the French language *zhă* ; an, en=*ă* ; the French have further the *nasal sounds* of *ă* : en and en (Peter of Amiens

—amyā—), *ō*: on (postillon—postyō), and *ō*: un (the treaty of Verdun—verdō).

ā (an, en): La Manche (māsh), Durance, Plateau de Langres; Anjou, Languedoc, Cambrai, Le Mans, Nancy, Orléans, Perpignan;—Provence, Canal du Centre, Lorient, Rouen, Sedan.

ō (on, om): Golfe du Lion (liō), Mont (mō) Blanc, Mont Cenis, Montmartre, Mont Perdu; Roussillon, Avignon, Besançon, Châlons sur Marne, Clermont, Lyons, Soissons, Toulon;—Franche Comté.

ā (ain, in): Saint (sā) Cloud, St. Denis, St. (sāt) Etienne, St. Quentin (kātā);—Limousin, Azincourt,—iens=īā: Amiens;—Reims (rās).

ō (un): Verdun.

FRENCH: *golfe* (golf)=*gulf*, *pas* (pā)=*strait*, *île* (īl)=*island*, *mont* (mō)=*mountain*, *pic*=*peak*, *roche* (rosh)=*rock*, *plateau*=*plateau*, *comté* (kōtē)=*county*, *canal*=*canal*, *hâvre* (hāv'r)=*harbor*, *fort* (fōr)=(strong place) *fort*; *châtelet* (shātele)=*a small castle*; *place* (plāss)=*place*; *Denis* (denī)=*Dionysius or Dennis*; *Etienne*=*Stephen*;—*lion* (liō)=*lion*;—*midi*=(midday) *south*; *manche* (māsh)=*sleeve*;—*centre* (ssāt'r)=*middle*; *concorde* (kōkōrd)=*harmony*; *grace*=*grace or favor*;—*blanc* (blā)=*white*; *neuf* (nuf)=*new*; *bel*=*beautiful*; *perdu* (perdü)=*lost*; *franche* (frāsh)=*free*; *saint* (sā)=*saint, holy*; *le* (masc.), *la* (fem.)=*the*; *de*=*of*, *du* (masc.), *de la* (fem.)=*of the*.

GOLFE DU LION=GULF OF THE LION; LA MANCHE=THE SLEEVE (the English Channel), so called from its shape;—PAS DE CALAIS=THE STRAIT OF CALAIS;—MONT BLANC=THE WHITE MOUNTAIN;—MONT PERDU=THE LOST MOUNTAIN (in Spain); PIC DU MIDI=PEAK

OF THE SOUTH ;—PLATEAU DE LANGRES=PLATEAU OF LANGRES ;—CANAL DU MIDI=CANAL OF THE SOUTH ; CANAL DU CENTRE=CANAL IN THE MIDDLE (of France) ; —ISLE DE FRANCE=ISLAND OF FRANCE (this region is island-like, surrounded as it is by the rivers Seine, Marne and Oise) ;—FRANCHE COMTÉ=THE FREE COUNTY ;—PLACE DE LA CONCORDE=PLACE OF HARMONY (in Paris).

LE HAVRE=THE HARBOR, or HAVRE DE GRACE=HARBOR OF GRACE ;—NEUCHÂTEL="NEWCASTLE" (in Switzerland) ;—ROCHEFORT=FORT ON THE ROCK ;—BELFORT=THE BEAUTIFUL FORT ;—ST. DENIS=SAINT DENIS ;—ST. ETIENNE=SAINT STEPHEN.

CHAMPAGNE=THE PLAIN ;—LES LANDES=THE HEATHS (sandy plains along the Bay of Biscay).

GREEK : πόλις=*city*, and *Gratianopolis*, now GRENOBLE, means the CITY OF GRATIAN (so named A. D. 379) ;—νίκη=*victory*, hence *Nicæa*, now in Italian NIZZA, in French NICE=CITY OF VICTORY.

LATIN : *mons*=*mountain* ;—*provincia*=*province* ;—*aque*=*waters* ;—*clarus*=*clear* ;—*trans*=*beyond*.

GALLIA TRANSALPINA=GALLIA BEYOND THE ALPS (so modern France was named by the Romans) ;—*Provincia*, now PROVENCE=PROVINCE (of the "Roman Empire") ;—*Clarus Mons*, now CLERMONT=THE CLEAR MOUNTAIN ;—*Aque Sextiæ*, now AIX (founded by Sextius Calvinus 22 B. C.)=WATERS OF SEXTIUS (battle 102 B. C.).

Aureliana, now ORLEANS=CITY OF THE AURELIANS (an illustrious Roman family).

CELTIC : *móri*=*sea* ;—*cēbin*=*mountain-ridge* ;—*late*=*marsh* ;—*ardu*=*high* ;—*ar*, *are*=*on*.

CEVENNES= RIDGE OF MOUNTAINS ;—ARDENNES=THE

HIGH WOOD.—ARMORICA=COUNTRY ON THE SEA (so modern Bretagne was called in the time of Cæsar); ARMORICANS=INHABITANTS OF THE COUNTRY ON THE SEA; ARE LATE, now ARLES=(situated) ON THE MARSHY GROUND.

LORRAINE is a corruption of the Latin *Lotharingia*=KINGDOM OF LOTHARIUS II., who reigned from 855 to 869 A. D.—BRETAGNE=LAND OF BRITONS, a Celtic tribe.—GASCOGNE, formerly *Vasconia*=LAND OF THE BISCAYANS.—NORMANDY is that part of France, which was occupied by the NORMANS or Northmen.—PARIS, in Latin *Lutetia Parisiorum*=*marshy city of the* PARISI, is named from its inhabitants mentioned by Cæsar.—RHEIMS was in the ancient times the capital of the REMI, a people of Gaul.



MAP OF THE CHOSŌN LAND.

FROM COREA TO QUELPAERT ISLAND: IN THE FOOTPRINTS OF KUBLAI KHAN.

By

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INTRODUCTORY NOTICE OF COREA.—The land of Corea or Chosŏn, for such is the native name of the country, drops down in a peninsula from the Manchurian plateau from the 43d parallel to the 33d parallel north, and is contained within the 125th and 130th meridians east. The northern frontier is marked by the rivers Yalu and Tumen, each having its source (supposed) in the famous *Pak-Tu-San*, Ever White Mountain, a place of many mysteries and innumerable legends. The Yalu running westward pours into the Yellow Sea and the Tumen flowing eastward empties into the Sea of Japan.

The contour of the peninsula is in singular conformity to the shape of a dragon, the ideal emblem of power, which exerts the most potent influence over the Corean mind; which, once swayed by Buddhism and subsequently by the ethics of Confucius, is now almost wholly influenced by Shamanism or the worship of the spirits of earth and air, the Dragon being the supreme agent and recognized alike by prince and peasant. It is not improbable that this configuration of Chosŏn has lent a double significance to "Dragon worship" in which "worship of ancestors" is accounted a mere incident. To establish the comparison, the reader may imagine the dragon's head to rest upon the mouth of the Tumen River in the Sea of Japan, the ears to project to Cape Bruat, the neck to form the indentation at Broughton Bay, the shoulders and back at capes Duroche and Pelissier, the tail at Fusan in the south, prolonged to Quelpaert Island, and the pedal extremities resting upon the islands of the archipelago in the South Yellow Sea and northward in the mouths of the Ta-Tong and the Yalu rivers. The backbone of the dragon on the eastern part of the peninsula is a sinuous range of mountains forming a sort of wall along the Japan Sea throughout the entire length south. The country descends in slopes and circuitous monticules toward the west, forming a succession of fertile valleys through which on their way to the Yellow Sea run the rivers Han, the Ta-Tong, the Yalu and others of less

importance. The climate of Corea is dry and cold in winter, wet and hot in summer. The four seasons in fact are well marked, the three months of spring are mild and temperate, while the autumn months are unsurpassed for their evenness of temperature.

The flora presents a varied and unlimited field of wild specimens, and the mountains which encircle the capital city are adorned in season with flowers of every hue.

The fauna consists of the bear, boar, deer, leopard, and the tiger. The presence of this latter, to be found in great numbers north of the capital and with longer hair and more vigorous body than his Chinese brother from whence through Manchuria he has come to Corea, must vex the naturalist, who will be at a loss to understand why the tiger should have abandoned his native haunts in the jungle to seek the cold and somewhat barren steppes of Manchuria and the distant mountains of Corea. Game of almost every kind is plentiful, and the black and white swan, wild geese, ducks, bustards and golden pheasants abound. The rivers afford fish, oysters, clams and terrapin.

The mineral resources of the country are reputed to be great, and the natives report rich deposits of gold, silver, lead and coal, but for a fact the government hesitates to award concessions to have them opened, alleging that digging into the earth and above all the hill-sides, would disturb the Dragon, and all sorts of ills would surely come out of such desecration. His Majesty Li, however, under a pressure of need of money seems quite disposed to grant concessions now, and only recently an enterprising American missionary visited the United States for the purpose of disposing of royal grants of this nature, but American capital was not allured even by the enthusiastic representations of the sacerdotal agent.

Corea, heretofore known to the outside world as the "Hermit Nation" by reason of her isolation, first opened her ports to Japan in 1876 and in 1882 made a treaty with the United States and subsequently with England, Germany, Russia and France, all of whom maintain, together with China, representatives at Seoul. It is a matter of justice to state that Corea was induced to abandon her policy of seclusion and treat with the outside world—whom she looked upon as "Barbarians from the Western Ocean"—through the friendly offices of Li-Hung-Chang, the liberal minded and distinguished statesman and Viceroy of China.

The change from the old to the new régime was not left unchallenged. Corea possessed a large class, and there is but little doubt that she possesses it to-day, a majority who hate the foreigner and who are wedded to the ancient order of things. The *Tai-Wen-Kun*, who was regent during the days of persecution and massacre of the missionaries and their

converts, is no longer in power, His Majesty Li having assumed the reins of actual government in 1873. Although living in retirement the *Tai-Wen-Kun* still exercises great influence, and to him doubtless are due the frequent acts of violence and disorder which have disturbed and even threatened the power of the State, notably in 1882, 1884, 1886 and again in 1888. These biennial revolutions show full well their forecast by the ever potent horoscope guided by the cunning hand of the *Tai-Wen-Kun*. His Majesty Li is descended from the dynasty founded by Li-Tadjo and is the twenty-eighth sovereign of the line. Subsequent to the fall of the Mongol dynasty from the Dragon throne of China in the year 1392, Li-Tadjo, then a young and ambitious soldier, was chosen King of Corea (that is Li-Tadjo murdered the reigning king and succeeded him).

Tadjo, with the instinct of the soldier, caused the capital to be removed from Sunto to its present site at Seoul with a view to utilize its admirable natural defences. His Majesty is known as Tai-Chosön, *Tai-Kun-Chu* (Great King of Great Chosön). He governs with three prime ministers with six boards or departments, each with a president and an unlimited number of vice-presidents. The high rank men are known as *Pansa*, *Champan*, *Chamwei*, with an officer known as *Chusa* who acts as the king's messenger or as interpreter to the different officers.

The revenues are derived from a land tax, the amount of which is an unknown quantity save to the "Chinese-Corean Customs Service," which was organized by China and sent to Corea as a model and which is composed principally of Europeans who have entered that service, and which has been established by Sir Robert Hart. The revenue derived from this service which includes the duties on imports and exports reaches scarcely two hundred thousand dollars, a little more than sufficient to pay the expense of the service itself.

The native taxes are collected by the king and the mandarin class, among whom there is an amicable arrangement as to its distribution, the system bearing a close resemblance to the ancient feudal customs, Corea, in fact, being a feudal government, pure and simple, in which the king and mandarins are after all but feudal barons. Prodigal in the extreme, this revenue is expended in the ever recurring fêtes and festivals, and the government is already deeply indebted to German merchants, who have given it somewhat *carte blanche* in the purchase of arms and the construction of a mint, which is inoperative, because the people refuse to use the newly coined copper money, preferring the copper "cash" of their "daddies," the only money current in Corea.

The discovery of a rich gold mine by the American prospectors, who have recently gone out, is perhaps the only hope to maintain the already seriously impaired credit of the once "Hermit Nation."

The population is variously estimated in numbers at ten to twelve millions of souls, and, more robust than either the Chinese or Japanese, is a type apart from either, and is a composite of the many wild races of the Manchurian plateau, from which it has been evolved. The origin of the Korean people presents an interesting study for the ethnologist, and in this sense as well as geographically the writer was induced during his official residence in Corea to undertake the expedition—an account of which is subjoined, to the island of Quelpaert, or *Chae-Ju*, where he found himself in the footprints of the great Mongol conqueror Kublai-Khan, who undoubtedly constructed the system of fortifications and sea walls, still in excellent repair, and which are garrisoned even now by the descendants of his soldiers left there, and whose very arms and accoutrements are doubtless the same once worn by the veteran legions of the great khan.

The island of Quelpaert or *Chae-Ju*, its native name, is situated south of the peninsula of Corea, about sixty miles, between parallels 33° and 34° north and meridians 126° and 127° east from Greenwich.

Forty miles in extent, E. N. E. and W. S. W., it has a breadth of seventeen miles, a high range of mountains traverses its entire length, culminating in the centre by a lofty peak known as HALLA SAN (cloud mountain) 6,500 feet above the sea level.

Two hundred and thirty-five years ago, in the year 1653, the Dutch ship *Sparwehr*, en route from Holland, bound to Nagasaki, was wrecked off the coast of Quelpaert, and of the crew of sixty-four men, thirty-six succeeded in reaching the shore alive. Among these was Hendrik Hamel, who, after fourteen years of imprisonment in Corea, escaped with a few of his surviving companions, and eventually returning to Holland published an account of his sojourn in the land of the "Morning Calm." His story for the first time lent a special interest to Corea, and it was subsequently incorporated in a book published at Amsterdam, 1680, by

Jacob de Meurs, entitled "*Contes des Ambassadeurs Memorables de la Compagnie des Indes Orientales*," and the following extract therefrom is cited as lending a dramatic interest to the island which, besides Hamel, had not been visited by any traveller from the "Western Ocean," nor indeed from any part of the globe, for the inhabitants of *Chae-Ju*, as we shall see, permitted no stranger to visit them. The author of the book, "*Contes des Ambassadeurs*," says :

"The pilot (of the *Sparwehr*), annoyed at not knowing where he was, finally took the latitude of the place and found that it was the Island of Quelpaert, which is in latitude thirty-three degrees, thirty-two minutes. The barbarians, meanwhile, burned all the wood of the vessel, and this nearly cost them their life, the great fire they made having so heated two pieces of cannon that they went off and shattered everything that lay before them in the direction of the sea, towards which they were pointed, though it happened that no men were there. This noise alarmed them so that they all fled as fast as they could ; but they came back soon after and finished their work, when they were assured that the thing would not happen again.

"After this the Hollanders went to see the Governor and made him a present of a bottle of red wine, which he found so good and so much to his liking that he gave them better treatment than they had had, sending them twice a day rice cooked in water; and, moreover, he would have them look on at the punishment of the men who had secretly carried away some fragments of the vessel.

"In this punishment they began by tying the hands behind the back with some bits of the iron that had been stolen; then the men were laid flat on the ground and beaten with sticks on the soles of their feet until they seemed to be half dead."

The amiable old Governor, the account alleges, was shortly after replaced by a man as brutal as his predecessor was kind and gentle. The prisoners endeavored to escape, but, caught in the attempt, they were brought before the Governor, who caused them to be placed in chains, and said :

"What was your plan, and what did you suppose would become of you, wretched men, when you risked yourselves at sea without bread or water or other things necessary to life? They all answered as with one voice that there was no danger they would not face rather than live as they did ; that their comrades in suffering shipwreck had died but once, while the life of those who had fallen into the hands of

his people was a continual death; and there was, therefore, nothing to wonder at if they ran every risk for the sake of liberty, since the very worst that could happen to them was to be punished with death, and they infinitely preferred this to the wretchedness they had to bear when they were prisoners.

"At these words the Governor made a sign to the executioner to do his duty, and at once he gave them, each, twenty-five blows with a stick, which so bruised and battered them that for more than five weeks they were not able to move."

A short time after this rude experience, Hamel and his companions were sent to the mainland of Corea in chains, there to serve out the pains which were theirs during the fourteen long years which elapsed before their escape.

Hamel has said but little about Quelpaert, and the following notes have been collected only after much patient research from Chinese sources, and also from the Japanese. In the "San Kokf Tsou Ran To Sets," or *Aperçu Général des Trois Royaumes*, translated from the original Japanese-Chinese by Klaproth, there is the following notice of Quelpaert :

"Tsi-Tcheou Tching is situated to the south of *Nan Yuan Fou*, and upon the island *Nan Pai-Tao*, in the South Sea, and which is also called "Ile de Tsi-Tcheou"—*Chae-Ju*. The Kings of Choson established there a city of the second class. It is the ancient *Tan-lo*, where under the reign of the Yuan's (1301), a military as well as naval station was established."

In the history of Corea, entitled *Toung Koué thoung Kian*, cited in *La Grande Encyclopédie Japonaise*, there appears this note :

"Tanlo is an island situated in the sea south of Corea (called on the maps Quelpaert). In the time of *Tcheou Wen Wang*, King of Petsi, the inhabitants for the first time sent tribute to Petsi. There is a mountain which comes up out of the sea. This is what the inhabitants of Tanlo tell about its origin :

"Clouds and mists covered the sea and the earth trembled with a noise of thunder during seven days and seven nights. Finally the waves opened, and there came up out of the sea a mountain more than 100 *tchang* high and having 40 *ri* in circumference. There were neither plants nor trees, and a thick smoke covered the top, which in the distance seemed as if it were composed of sulphur. *Thian Koung*

Tchi, a doctor of the Corean University, went to examine the mountain in detail and made a sketch of it. This event happened under the dynasty of Soung in the 4th year of the reign of the King Té (1007 A. D.).

"In the sixth year *Tchaoting* (1233 of our era), and under the Soung dynasty, the Mongol Emperor Ogadaï sent his general, *Sa-li-tha*, to conquer Corea. The latter arrived, and pushing as far south as the royal city, besieged and took *Tchu-jin tching*.

"The Mongols established in the capital and in the other cities a system of inspectors—seventy-two in number—whom they called *Darokuhatchi*. All of these, it seems, were killed by the people of Kaoli, whereupon the Mongols marched an army (ten corps?) against the Kaoli, and taking in turn every city finally established order and peace, and from the year 1264 A. D. to 1294 the entire country was under the banners of the Mongol empire."

That Quelpaert fell under the sway of the Mongol there is little reason to doubt, for we are told by the same historian that when Thei-Tchung Sun was proclaimed King of Kaoli "he was obliged to seek refuge in the Island of *Tchin-Tao* (Chu-Ja?) an adjacent island to Chae-Ju (Quelpaert), where the Mongols followed, punished him, and *re-established* their authority." So much is gathered from the misty pages of Chinese history.

Quelpaert, it must be admitted, is *terra incognita*. Neither before nor since the days of Hamel has a man from the Western world set foot upon its inhospitable shore.* Like the imaginary "Islands of the Blest" which existed in the poetic fancies of a past age, Quelpaert was an undiscovered country, nor did Hamel's involuntary visit throw light upon the strange island and its people, for it must be understood that during his stay he was a prisoner, and with his comrades was speedily transferred to the mainland of Corea, to which country there has been a nominal attachment.

*A ship was wrecked several years ago on the coast, but the survivors were sent off immediately to the mainland, and thus cannot be said to have visited the island.

The writer, then Secretary of the United States Legation and Consul-General in Corea, was induced to undertake the journey of exploration of the island from the foregoing facts, and, if possible, find there a clue to the somewhat mysterious origin of the Corean people, whose type, neither Chinese nor Japanese, would seem to point to a composite race formed from the various hardy clans which had followed the standards of the great khan in the overflow of the Manchurian plateau whence had come the Kitain, Mongol, Tartar and Turk, out of which had sprung the Corean.

In the month of August, 1888, after much solicitation the Government of His Corean Majesty Li acceded to the writer's request, and through His Excellency, Cho Pyong Sik, the President of the Corean Foreign Office, a special passport or *quanja* was furnished. It is true Mr. Cho said: "You will not be able to go, nor should you persist, the people of the island are savages, and His Majesty greatly fears that harm will come of your visit." Notwithstanding the cold comfort of this counsel, I engaged an interpreter and cook, and fixing upon the port of Fusan as the best point of departure for my destination, I left Seoul on the 4th of September, 1888.

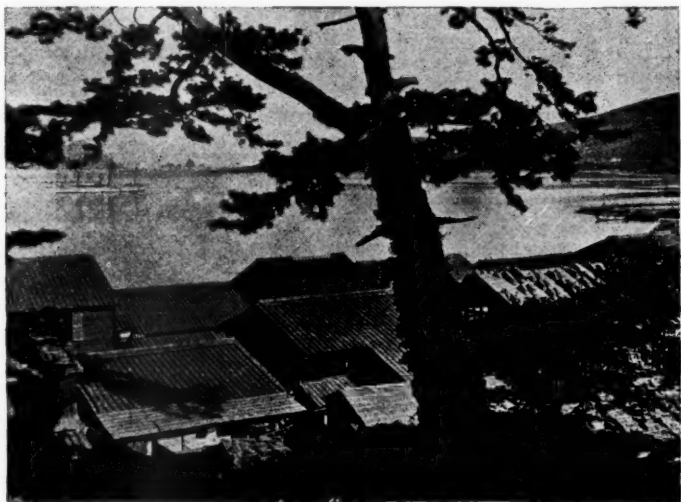
I.—THE DEPARTURE.

1888, 5th September.—On the 5th of September, accompanied by Kim Wone my interpreter and Chung my cook, both Coreans, I took passage on the steamer *Higo Maru* from Chemulpo to Fusan, where I proposed to engage a boat for Quelpaert.

As the *Higo* steamed out of the harbor of Chemulpo the U. S. vessel *Essex*, then in port sent up her

signals to wish me success and *bon voyage*, to which the *Higo* responded in my name "Many thanks."

On the morning of the 7th we were at Fusan; it so happened that no boats were in port and I was told that it would be necessary to wait for several days. Kim and Chung with luggage went on shore, while I decided to profit by the delay, proceed in the *Higo* to Nagasaki



FUSAN LOOKING SEAWARD.

and completing there my supplies, return by the same steamer to Fusan.

In Nagasaki I was entertained by my numerous naval friends, officers of the U. S. vessels the *Palos* and *Juniata*; by the genial American Consul Mr. Birch, and by my friend, J. M. Stoddart, a grand whole souled son of Scotland, who obliged me *vi et armis* to quit my hotel

to become his guest. Whilst in Nagasaki S. induced me to take a *jinriksha* and visit the boiling springs of *Ungen* and *Obama*, 30 miles distant, a most novel and interesting sight, to say nothing of the magnificent and picturesque scenery along the route. I was enabled also to have a glimpse into the inner life of the peasant people, and of course was elegantly entertained in the superb tea-houses—refectories—which distinguish the Japanese above all other people. At *Ungen* and *Obama* I had a peep into bath houses where fifty or more natives of both sexes and of all ages were bathing together perfectly unconscious of any infraction of law, moral or otherwise. Nor was there infraction of any Japanese law, nor was there the slightest intimation of rudeness or vulgarity. *Honi soit qui mal y pense* seemed to be written in these simple, happy hearted people's minds, and was certainly strong enough to preserve a decorum that was irreproachable. In the Western world it would have been called "shocking!" in Japan it was not considered at all bad form, another proof of the maxim *autres peuples, autres mœurs*.

Returning, the *Higo* stopped at the *Gotos* and *Tshu-shimas*, "beautiful isles of the sea," where I went on shore and roamed about for several hours amid the peaceful shades and cool sequestered vales, where devotees of Buddha with an eye to the beautiful have placed their shrines. On the 19th, I was back at Fusan. Installed at the hotel "*Kokei-ti*," I set about securing a boat. Mr. H., the collector of the port, had made every effort for me, but as yet in vain. Finally, he kindly accompanied me to enlist the aid of His Excellency, *Yu Kee Han*, the Corean Superintendent of Trade. The latter put on his

official robes and took us on board of a Corean junk whose captain he supposed would immediately incline to his wishes and treat with me, but not so; the captain positively refused and said: "I will not take the foreigner to Chae-Ju. Kill me if you will now, for if I took him I should be killed. No man can go to Chae-Ju." Mr. Yu was furious: he caused the captain's hat to be knocked off, the greatest indignity a Corean can suffer, and ordered him to be marched off to prison, but I intervened and had him released. The incident was discouraging and served to show me the impossibility of securing a Corean junk in Fusan.

Through the kind interference of Mr. Murota, the Japanese Consul, I was at length furnished a Japanese boat, a *Sampan*, a mere fishing skiff, but reputed a good sea boat. I was told that I could make the journey with this through the Inland Sea, and arriving at Soando, the extreme southwestern point of the Corean peninsula, there procure a Corean junk with which to make the difficult *traversée* to Chae-Ju. There was no other alternative, therefore, and I at once concluded an arrangement with the Japanese captain and his crew of four men. Our *sampan* was little more than twenty feet in length and six feet in width, and, what with myself and personnel, must contain eight souls, a fact which added greatly, as may be imagined, to the risk of the undertaking, "What," I asked Mr. Murota, "will the people of Quelpaert think of such a journey?" Five hundred miles in such a tiny craft would certainly prove to be a surprise even for such "toilers of the sea," as the pirates of Chae-Ju, should we be compelled by chance to make the entire journey in the *sampan*.

II.

On the afternoon of the 22d of September, our luggage being safely stowed on board, we bade adieu to the entire European colony, five in number, assembled to see us off, and having set our somewhat primitive sail, we glided swiftly out of the harbor amid the cheers and waving of handkerchiefs of our friends, and favored by a good stiff breeze Fusan soon faded upon the sight, and ere nightfall we had entered the Inland Sea, not less beautiful than the famed Inland Sea of Japan. After sun-down the wind had freshened and our boat, which we baptized the *Bravo Maru*, danced and beat the sea in such a violent way that it was decided to run in under the shore, and, finding that this was attended with some danger, to anchor for the night under cover of a friendly headland.

At sunrise on the 22d the *Bravo Maru* was again under sail, and bounding along with a fair wind on our quarter.

The Inland Sea was quite unknown to Europeans, and had been navigated till now only by Japanese and Corean fishermen. Like the formation of the mainland, the sea itself is a succession of basins formed by a circular range of cold grey peaks and cones, whose bare and pointed summits, like church spires or castle turrets, cut the air with such symmetrical lines that they seem fashioned by the hand of human art, or, assuming some fantastic or diabolic shape, appear the device of demons. Even so in the Inland Ocean. Here are the same granite giants grouped in amphitheatral array, rising out of the sea instead of the valleys. They envelop, seem to follow you as you sail along and, clos-

ing around you at times, bar the passage. A color is given to the beautiful panorama by cultivated patches of green on isle and mainland and by the contrast with the deep blue of the water. At sunrise, when the sun flashes its first rays upon the horizon, it covers these solemn stony sentinels with a blush of purple and gold which defies the brush as well as the pen of the most inspired artist and writer to portray.

25th September.—On the 25th, at night, we ran into *Soando* (placed on the Admiralty chart as "Crichton Harbor"). It was from this place I proposed, if possible, to obtain a Corean junk with which to make the somewhat dangerous *traversée en pleine mer* to Quelpaert. Although quite dark I immediately landed, and accompanied by Kim took my way to the village, to which we were guided by lights and by the barking of dogs. After some difficulty we succeeded in awakening the people, who gathered from all quarters of the town and stared at us with amazement and fear depicted in their faces. Kim's Corean costume and our passports and *quanja* finally reassured them, and shortly after the chief, who had doubtless been waiting developments, arrived upon the scene.

We had been told that a mandarin was in command, but the chief proved to be only a "low rank man." He was a very good fellow, however, and when he had carefully looked over our papers and became convinced that we were friends, he advised us to move our boat to a more secure harbor and sent with us a man as a guide, promising to call upon me in the morning.

26th September.—On the morning of the 26th the chief, accompanied with his escort, came to see us. We

received him with marked consideration, and at the end of a long *séance* I broached the question of the Korean junk with which to make the *traversée* to Quelpaert. The chief insisted that there was but one boat in port, pointing to a miserable looking craft which was moored near by and which, by parenthesis, was then serving as a *pig-pen* !

I was, I need scarcely add, greatly discouraged by this *dénouement*. As I have said, I dreaded to take the open sea with my *sampan*, and dreaded also to be handicapped by my Japanese sailors, for between the latter and the Coreans there has been bad blood ever since the terrible invasion of the armies of the Tycoon, the horrors of which are still fresh in the minds of the Coreans. This feeling promised to be more pronounced in Quelpaert on account of the incursions made by Japanese fishermen upon the fishing reserves of the people along the coast. In my dilemma the chief proved to be my *mascot*, for when he had been well filled up with wine by Kim he became most generous, and said : " Say to the *Taine** that I have a pilot here, a man from Quelpaert who will take him across to Chae-Ju." Suiting the action to the word, he sent off for the man, and presently he came, a tall brigandish looking fellow, apparently 60 years of age. The chief called him up, made him sign a paper, which he presented him, and in a few moments *Yang Man Tuk* took his place on board, happy in the prospect of returning to his home. I re-engaged my Japs for the round trip, and the matter was thus settled.

27th September.—The 27th was passed in the harbor

* *Taine*.—A term applied to all persons belonging to the upper classes.

of Soando waiting for a fair wind. During the day I was given an opportunity of witnessing the expert manner in which the Japanese catch *tai*, a very fine fish resembling our red perch, and when wearied of the sport I went on shore with my camera and photographed the port, and the people who had assembled to have a look at us. At 5 P. M. *Yang Man Tuk*, with the instincts of a sailor, announced a change of wind. Standing on a ledge of rocks near by the *Bravo Maru*, he pointed toward Quelpaert in the south, and looking toward me, said :

“ *Taine ouriga Chae-Ju ril nil pogesso*.—Excellency, we will Chae-Ju go to-morrow see,”—being the literal translation. The attitude and pose of Tuk were inimitable ; bidding him keep his position, I brought my camera to bear upon him, securing thus not only a portrait of Yang Man Tuk, but at the same time a picture of little *Bravo Maru* in the bay of Soando.

Following the directions of our pilot we got under way at sundown and pulled out to Advance Island, a distance of ten miles or more, and there under the lee of the rocks in a little port we cast anchor and spent the night.

28th September.—Tuk proved himself a prophet, for at 4 A. M. the watchful captain announced a fair wind and shortly after the *Bravo Maru* was on her course, pointed for Quelpaert, whose monster outlines could be seen even through the mists of morning in the far distance.

The little craft when fairly out upon the open sea was shot along upon the rough billows rather than sailed. A big sea was on, and I fully realized the danger as she was followed by both wind and wave, which threatened

to topple us over completely. Reef after reef was taken in under the orders of Tuk, who sat the while in the prow serving as ballast as well as pilot, grimly smoking his pipe; Kim and Chung were much too busy in arranging their accounts with Neptune to note the danger. As for myself I had ample time to reflect upon the probabilities of reaching Quelpaert, and it was by no means reassuring to see that Tuk had abandoned his pipe and watched carefully the little boat lest she should be swamped.

At noon Halla-San towered above us in all his majesty, and an hour later, half drowned with the seas which had washed over us during the entire trip, we passed from the dangers of the sea into the port to enter upon another phase of peril which menaced us from the land, for the grim, black rock walls of the port fairly swarmed with human beings attracted by our approach. We had arrived at Quelpaert! Should we be allowed to land? And if on land should we be permitted to return? With these reflections and the recollections of Hamel in chains passing in my mind, our little boat glided into the smooth waters of the interior port.

III.—THE PORT AND CITY OF PELTO.

As we neared the shore there was a clamor of voices from the multitude, a wild, savage looking set of men, in whose fierce faces there was blended an expression of astonishment: "Who are you?" "Where are you from?" "Why do you come here?" "No foreigner can land in Chae-Ju; be off." These and other expressions, insulting and defiant, decided me that any attempt

to land for the moment would simply cut short our career in Chae-Ju. "Kim," I said, in a stern way, for I saw he was weakening badly, "stand up and show your Corean dress to these people; tell them "to hold their tongues, we do not care to land until the mandarin so orders. Send your chief to us."

The very audacity of the challenge amazed the mob,



FORT PELTO.—SEA-WALL BUILT BY THE GREAT KHAN.

and in a moment a man came forward, took our proffered papers—passport and *quanja*—and disappeared, followed by a curious crowd, eager to learn the reason of our visit.

"A foreigner come to Chae-Ju; what an impiety! What a calamity!" Such were the muttered ejaculations of those who remained and looked down upon us

from the walls, or jostled each other for place along the quay to catch a glimpse of the white man. The situation was novel, but it was not new. It brought to mind my *entrée* into the capital of Uganda in 1874 and the thousands who thronged to catch a glimpse of me and my horse—for white man nor horse had ever been seen before—and then when they saw me dismount! their flight in terror at the unlooked-for sight, for they had taken me for a centaur!

In Quelpaert it was the *white man* alone, and not the horseman, who engaged all the attention of the people. Nor was there much fear that my visit, as in Uganda, would be attended with the bloody drama which was one of the special privileges of King M'Tsé—continued even after his *conversion* to Christianity. Let me hasten to anticipate my story and reassure the reader, for happily, the human sacrifices made in my honor in Uganda have no place in my experiences in Quelpaert.

Whilst waiting for an answer from the Governor, and somewhat reassured by the calm which had succeeded the storm of excitement with which we had been welcomed, I had time to take a look at the port and the city from the boat.

The port of Pelto is formed within two projecting hills which jut out from Halla-San, comparable to the fore-paws of some colossal sphinx. Within the space embraced by these projections there is a sort of bay, in which, extending from the city wall, are several lines of breakwaters constructed with much care and skill, all of which—city walls and breakwaters—are built with a black volcanic rock several feet thick and sufficiently high to afford protection for the small craft for which it

is destined. An exterior line run from one point to the other would constitute, at small cost, an admirable port for steamers and vessels of large draught.

The city of Peldo is known to the modern cartographer as "North City," in default of any other name. It is built in the valley, or, rather, on the hill-side, for Halla-San, as we have said, runs out to the sea—from out of the sea I should say, to follow the legend. The city consisting of 600 houses, perhaps, with the usual Corean enumeration of five souls to the house, gives a population of three thousand. The houses are built of black rock, with thatched roofs. Surrounded by a wall of the same material, the town has an air of solidity which gives it the appearance of having been a fortified place. In fact, it is out of this very port, doubtless, that the Mongols sailed with their fleets to prey upon the commerce of that day, and here, perhaps, was the *chef-lieu* where they organized their successful invasions of Corea.

Night fell and still no answer from our dispatches; the wind went down somewhat with the sun, but was from the north, and consequently adverse, should we be obliged to "scuttle out." To meet any emergency we literally went to sleep on our oars, our Japs being warned that if hostility should be shown we were to cut and run, but that no one was to "board ship" under any pretext. To enforce this we were to use our knives, with which we were all well armed.

29th September.—At 2 A. M. we were challenged—"a messenger from the Prefect of Police!" Awakened, I told him to ask the man, who appeared in a boat, accompanied with several others, what they wanted; they

replied: "Mr. Kim to come on shore, the Prefect desires to see him." "By no means," I cried—"come in the morning, Mr. Kim can't see you to-night." And the messenger disappeared in the darkness. The incident was calculated to make us somewhat nervous as to its real intention, and for a certain time it seemed as if the precautions taken as to defence were most seasonable.

On the 29th I waited until 10 A. M., and was about to send a messenger to the Prefect, when he sent a *kissu** to request that Kim should come on shore because he wished to arrange for my reception. Kim accordingly arrayed himself in his gala clothes and sallied forth, and returned about an hour afterward with the information that the tent being erected on shore was put up for my reception. At noon there was a blare of trumpets, with discordant notes of Corean reed instruments and the bagpipe—the Scotch bagpipe being certainly of Corean origin (?)—the strange cries of coolie servants, bearers of sedan chairs, and then two standards were planted at the tent door, from which floated banners of orange and red colors and on which were painted strange devices. Behind these came the Prefect and his escort. When the officials had entered the tent a messenger came to say that the *Taine* was awaited.

I was dressed for the occasion in a uniform which had seen some service, but was still elegant and attractive. The gold lace and rich braid struck a chord in the fancy of the people who crowded about us, as accom-

* *Kissu*, a corps of independent soldiers employed in Corea as messengers by all officials.

panied by Kim I proceeded to the tent, around which surged and struggled a mass of men—to get a look at me—and who were kept at bay only by a number of policemen armed with a formidable paddle known as *conjang*, an instrument—an enormous paddle—which in Chae-Ju, as in Corea, inspires the public with some respect, for without the *conjang* it is difficult to command the respect of the multitude. The paddle does this effectually. Entering the tent I found myself in the presence of two officials dressed in a costume resembling that of the ancient Tartars; the black felt bell-crowned hat, with peacock feather and long red tassels, being its chief feature. The Prefect of Police—for such I learned was the office of the chief—as well as his aide-de-camp, who sat beside him, wore immense colored crystal goggles after the manner of almost all Oriental men of rank, ostensibly for protection to the eyes, but in reality a pure affectation, which is supposed to lend dignity to their bearing. As I looked around me the scene was novel in the extreme, and not a little embarrassing. All eyes and necks were strained in the effort to get a look at me, and hear my response to the interrogatories addressed me by the Prefect. “Who are you? Why did you come to Chae-Ju, and why did you come alone? Chae-Ju, you must know, is forbidden land. Are you a missionary?” Notwithstanding the gravity of the situation I laughed outright at this last question, and answered: “Do I look like one?” pointing at the same time to my uniform. In turn they laughed and said: “No, you do not, in fact.” I could only surmise that the official had come from Corea and had imbibed there the prejudice against the missiona-

ries, and hence the query. To all of these interrogatories I plead my passport and *quanja*, and turning to the Prefect, said: "My business is with the Governor; why does he not receive me?" To this no reply was vouchsafed. One of my Japanese sailors was sent for and his answers to a multitude of questions were duly enregistered. The date of our arrival, names, etc., were inscribed, to all of which we were asked to affix our signatures. This may serve some future Oriental society in Chae-Ju a thousand years hence to commemorate our visit, or "to point a moral or adorn a tale" to be told by some future voyager.

As usual on such occasions a repast was brought in consisting of fried sea-weed, fish, *chun-boc*, rice and other edibles, the character of which was unknown to me. *Sul*, an extract of barley common in Corea, was also served. I partook of the sea-weed and drank the *sul*. Kim said to me after he had watched me for some time: "Don't eat the food nor drink the *sul*, it may be poisoned." "You are a fine fellow," I said, in disgust. "Has it only now occurred to you to counsel caution when you have seen me take enough to settle me?" The general conversation of the officials, in which the attendants joined, ran upon the quality and cut of my clothes. The people of Quelpaert, in common with those of Corea, are maniacs on the subject of dress. An outward appearance of clean linen is indispensable to the gentleman, however unclean his person or undergarments. My field glass was the next special object of wonder. In fact it had already won for me special consideration in Corea, as well as in Chae-Ju. When shown how to use it and directing it towards Halla-San they could plainly discover objects thereon,

they held out their hands as if to touch the mountain, and said, "this is surely magic." When in Uganda I won the favor of the king and the people with a galvanic battery, and became in their imagination a sort of *Deus ex machinâ*. In Quelpaert I won the esteem of the people with my field glass, assuming in their eyes to be possessed of a power as great as that of a *Dragon* and the "All seeing Argus."

Finally, wearied with the audience, which seemed interminable, I arose to go, bowed myself out, and followed by the people returned to my boat. Later on the Prefect came to see me, and Kim entertained him for several hours. He made him a few presents, and the Prefect finally said, that he hoped during the night to have a reply from the Governor. Kim said to him that I was quite tired of the delay and that I protested against my being compelled to remain on my boat, for the reader will understand that neither myself nor people were allowed to land for a moment; we were in fact prisoners.

IV.—CHU-SONG, THE CAPITAL CITY.

30th September.—During the night, as promised by the Prefect, he sent a message to say that orders had been received from the Governor to escort me to the capital at 10 A. M. Official recognition, it was evident, had dispelled all idea of violence, judging from the changed attitude of the people, which was no longer one of menace, but still of insatiable curiosity. At 9 A. M. the whole town was in an uproar, there was a clanging of rude instruments, the screech of ear-racking pipes or flutes, and the gathering of the queer host which com-

posed our escort. The Prefect and his subordinates were out in their gorgeous and vari-colored robes. At the last moment he came to say that the Governor had ordered one of my Japanese sailors to come along also. "Why?" I asked, rendered somewhat suspicious of such a strange request. In fact I felt no little uneasiness on this account, knowing the hostility of the people generally to the Japanese. My fears fortunately were groundless, for he passed through the ordeal all right.

Promptly at 10 o'clock, in full dress and accompanied by Kim and Chung, I bade our Japs be of good cheer, warning them not to leave the boat upon any pretext whatever, and left them, promising to be absent but a short time. We passed through the town on foot, accompanied by the Prefect, and joined the escort which awaited us.

The spectacle which met my gaze was startling! Mounted on little ponies I beheld two hundred or more men, holding in their hands, each, a banner or flag on which was inscribed some strange device. Their dress consisted of a complete coat of mail, whilst on their heads they wore a round copper or brass helmet surmounted with a heavy spike. From the helmet a curtain of plated leather fell upon the shoulders, and down over the faces of the warriors themselves a mass of long black hair straggled in disorder, lending to the great black eyes, set in faces bronzed to a mahogany hue, an expression of brutality, anything but pleasant to the sight. Covered with dust and clothed in a dress several centuries old, what wonder that I started as at a ghostly apparition of what seemed a detachment from the armies of Genghis and Kublai Khan, or again a part of the

conquering hosts of the Mongol emperor, who set his seal of empire upon *Tanlo* as early as 1233?

These rough looking soldiers interested me strangely. It was in fact the grand object of my journey, as I have said, to mark the difference between the confused types in Corea and these people, who, I assumed, would show by reason of their isolation a more distinctive and pronounced type of the race to which they belonged.

It was only too manifest that the men before me, the traditional and professional soldiers of Chae-Ju, had descended from the time, 650 years before, when military garrisons had been placed in the island. Their arms, of the most primitive pattern, and accoutrements and armor, all bore the imprint of great age and were undoubtedly the same which, handed down through successive generations, had been worn by their valiant warrior ancestors in their conquest of Corea and their final occupation of *Tanlo*.

Whilst I indulged in these speculations the column formed, the bugles, accompanied by the shrill notes of the bagpipe, sounded the march, and in single file it moved on. Not so, however, the wild little mustang which had been designated as my mount. Untamed and unbroken, he certainly was, for the two men who held him by means of ropes on each side kept the beast at arm's length and durst not approach him. I mounted at length by a ruse, and then commenced a series of gyrations and gymnastics which I have rarely seen equalled, even in the camp of Buffalo Bill. When the brute had well-nigh kicked himself out of joint he finally concluded to join the march, but after a short distance refused to move. The column halted again, and quite in despair I dismounted,

having won some applause for not having had my neck broken, as I had every reason to suspect had been the intention of the Prefect in giving me the brute.

A march of two hours brought us to the south gate of *Chu-song*. The approach to the capital leads through a narrow street, flanked on each side by high black walls which deflect from the main wall which incloses the city itself. The ponderous gate was shut, and we were obliged to dismount and wait the orders of the Governor to open it, this being an ancient custom in Quelpaert where, contrary to the rule in Corea, the gates are never closed either night or day, except on the occasion of the arrival of a guest.

On the walls of the city on all sides swarmed a mass of human heads who peered down from their perches upon us, or crowded around to suffocation to catch a glimpse of the stranger. An hour of this painful ordeal was passed, in which I was subjected to a good deal of rude jostling. One fellow came up and thrust his face close to mine, leered at me, and, like some insolent *gamin*, said boo! boo! as if to frighten me, all of which caused no little merriment among the crowd. The Prefect all this time stood aloof, and Kim and Chung provokingly clung to him and seemed afraid lest the people should identify them with me. Fortunately, at this juncture the Governor's commands were received, the gates were opened, and, remounting, we filed into the streets of the capital. As the column passed through the dense mass which blocked the way, the *conjangs* were applied to the backs of the people most unmercifully by the guards, who ran along on each side of the column, shouting and gesticulating.

Proceeding a short distance, the head of the column suddenly turned westward, and after a march of five minutes debouched on a broad plaza, on each side of which were drawn up in single file a hundred or more soldiers, the counterpart of those who composed my escort.

At this moment a gun was fired ; it demoralized Kim completely, and I confess that I was somewhat startled myself, for I did not know its significance. It might have been the signal for a fête or an execution. Evidently Kim thought it was the latter, for he broke away from me and disappeared in the crowd. I called him back, reassured him, and together we followed the master of ceremonies, who now approached and conducted us through the dense mass of people and along the lines of as wild and barbaric looking men as it is possible to imagine, and whose forefathers, perhaps, had received in some such fashion the visit of the great conqueror of that day, Kublai Khan.

At the end of the broad plaza stood the audience hall, where sat the mandarin surrounded by all the paraphernalia and people which hedge about a throne. The Governor of Chae-Ju, in fact, is an uncrowned king, but his authority is by no means absolute, as he himself confessed to me. Led by the master of ceremonies, we reached the steps of the audience chamber. Kim there left me to enter by a side-door, whilst the master of ceremonies threw himself upon his hands and knees, where he remained, until passing quickly through the passage way I gained the presence of the mandarin, and with uncovered head took the proffered seat of honor on his left, beside which now stood my interpreter Kim.

The Governor was a man of perhaps fifty years. His features were cleanly cut and his face clearly of the Tartar type, although somewhat obscured by a pair of huge spectacles of smoked glass. Dressed in a court costume of rich and vari-colored silk, his hat of black felt was ornamented with the decoration of a peacock's feather and other insignia of high office. He opened the conversation by expressing regret at the delay in according me a reception. Dropping his voice to a whisper, he said to Kim : " Say to the *Taine* that his visit has caused me great trouble, and I fear much for him as I do for myself. Two hundred people have come to me to protest against his coming here, or his being allowed to land as a violation of the laws of Chae-Ju. I have," he continued, " told them that you are neither missionary nor merchant, but a representative of a foreign nation and a friend of Corea. This has appeased them, but as you value your life do not attempt to go up to the top of Halla-San, and go away as soon as possible." The Governor added : " One hundred days of sacrifices must be performed in any case before attempting to climb the mountain in order to propitiate the spirits of Halla-San. If this be not done great evils would surely follow, and this is the great cause of the people's hostility. I could not protect the *Taine* against the fury of the people."

" Tell his Excellency," I said to Kim, " that the *Taine* did not come to Chae-Ju to violate the customs of the people or bring upon them the ills which he says would follow. The *Taine* will not go to Halla-San." This announcement caused a murmur of approbation

to run through the assemblage, and the Governor was apparently much gratified.

A *chow* (repast) was brought in, of which I partook sparingly. During this time Kim was asked a thousand and one questions about myself, and what he didn't know he supplied from his fertile imagination, and if the Governor should be addicted to writing history I am certainly booked for a place in the annals of Chae-Ju not less grand than that of the great Khan.

Finally, the Governor perceived that I had quite enough of him for that day, and, much to my satisfaction, he turned me over to his master of ceremonies, whom he ordered to conduct me to the quarters to which I had been assigned. Shade of Hamel! I shall ever have cause to remember my habitation in Chae-Ju. I spare the reader the description. "Kim," I exclaimed, "they gave me a pony this morning to break my neck, and now we are to be asphyxiated. The Fates of Chae-Ju are implacable." Kim, as well as Chung, however, seemed much pleased and the reason was made apparent, for I heard Chung say: "Master no likee; stinkee muchee, he must go away." Chung was right, for no human being could withstand the awful odor of the place. "Ask for a guard," I said to Kim, "I will do this place up as speedily as possible; observations and photographs in the morning; back to Pelto at night, *you savez?*"

v.

Chu-Song is situated perhaps a mile from the sea, and certainly not more than five miles from Pelto, its port. Seen from an eminence it presents the appearance of a Korean city, but the houses, though rude, are

much more solidly constructed. The streets are wider as a rule than those of Seoul, dirty of course, but devoid of trenches, nor so horribly foul as the latter city.

The wall which encircles the city is quite twenty-five feet high, built of black volcanic rock, mounted at intervals with towers and turrets, which serve as lookouts. Three gates give entrance to the city: Tong-Mou, east gate; Su-Mou, west gate, and Nam-Mou, south gate. The three principal cities of Quelpaert are Chu-Song, Chong-Hai in the east-southeast, and Tai-Chong* in the southwest. Chu-Song has a population roughly estimated at 25,000, the other cities 5000 each, the entire population of the island reaching certainly 50,000.

The public building is the audience hall, an imposing structure built in the Chinese Yamen style. It has evidently been renewed of late years, rather built anew, for alongside of these comparatively new buildings there stand the ancient structures falling in ruins. A large bell within a kiosk stands on the right of the audience hall, something after the model in the *Chong-No* at Seoul. What its particular office is I could not learn absolutely, except that I was told that it was tolled to keep off the evil dragon. It was not to ring the people in doors at night, or toll the women out, as in Seoul, nor close nor open the gates, for none of these customs prevail in Chu-Song. The gates are never closed except upon such occasions as we have cited, and both sexes are free to circulate at all hours, day or night.

* The harbor of Tai-Chong, known as Yung-Su, is a good port in which large vessels and steamers can find good anchorage. It is said to be the very best harbor of the whole coast.

The country from Peldo to Chu-Song is well tilled, and as far as the eye can reach over hill and dale and far up the sides of Halla-San, there are cultivated patches well inclosed by walls built in squares, I was told, to protect their crops against the incursions of wild animals. The principal cereals grown are beans, peas, barley, millet, buckwheat and wheat, with also a little rice, but wheat is the staff of life, which may account for the good physique of both the male and female.

Oranges, limes and several kinds of nuts and plums are plentiful. The fauna consists of the wild boar, bear and deer. The natives assured me that there were great quantities of wild geese, swans, golden pheasants and quail, but I cannot vouch for the statement, for I saw none during my stay in the island.

The islanders are, of course, fishermen, and use for their trade a sort of double decked raft, a curious arrangement, great numbers of which may be seen near the port of Peldo. A monster bivalve called *Chun-boc* is found here in great quantities. The clam, for such, in fact, it is, is greatly prized as an article of food when dried, and the shell furnishes a beautiful *nacre* or mother of pearl. The Japanese fishermen along the coast have discovered this, and, when they dare, approach and stealthily fish and even barter with the natives, whose prejudices yield at times to the tempting offer of cloths and small wares offered in exchange. The *Chun-boc* taken to Fusan is exported to Japan, where it is greatly valued for the inlaid work and ornamentation, in which the Japanese show great skill.

Hamel, in speaking of the Coreans, said: "As for

religion, the Coreans have scarcely any. They know nothing of preaching or mysteries, and therefore have no disputes about religion." This is most true of Quelpaert. The religion of Buddha entered Corea in the fourth century and reached its apogee of power and splendor from 960 to 1592, A. D. It built splendid monasteries and temples, some of which are still maintained, but religion and temples are fast dying out of Corea. The accession of Tadjö to the throne of Corea sounded the knell of Buddhism in the land. It is difficult to ascertain how it was accomplished, but it is a significant fact that the priests who once represented a refined and cultured religion are at this moment relegated as soldiers to the defences of the mountain fortresses, which were the inspiration of this soldier king, who by thus secluding them secured not only the best soldiery for defence, but struck a fatal blow at the same time to Buddhism, which from that moment perished for want of contact with its natural sources. Buddhism in Corea was the mother of that art and literature which seem to have astonished those, who have found it curious that a people reputed barbarian should possess the elements of art. It was not, however, in any sense a Corean art, but an exotic plant brought from India, doubtless at the same time that it introduced an alphabet which, notwithstanding its association with the Chinese, is distinctly and particularly Indian. M. Léon De Rosny in his book entitled "*Les Peuples Orientaux connus des anciens Chinois*," says *à propos* to this subject :

"Les migrations indiennes qui ont apporté, dans le pays de Tchao-sien (Chosön), les caractères indiens, n'ont pas été sans y introduire les grandes doctrines du

brahmanisme et du bouddhisme, et, avec elles, les principaux monuments de la littérature hindoue."

To those who have claimed that it was from Corea that a religion and art were introduced into Japan, it is only necessary to reply, that the undisputed fact is only another proof that it was neither Corean nor Japanese, but, as M. Rosny has asserted, Indian. Every vestige of a pseudo Corean art has faded and gone since the temple was closed, and the so-called literature of Corea exists to-day only in an affectation of Chinese letters. Buddhism, it is certain, obtained a footing in Quelpaert, for along the streets through which we made our entry I did not fail to remark four large statues of Buddha, hewn from solid black rock and worn and defaced by the hand of time.

The religion of Quelpaert, like that of Corea, is simply a belief in the spirits of earth and air, an admixture of the worship of ancestors, with some idea of the transmigration of souls, but over all the Dragon power is the predominating element. The mountain Halla-San is the spirit god of Quelpaert. All trace of Buddha has gone save the stone images which the Mongol conquerors had failed to destroy.

HALLA-SAN.

Halla-San, lofty, grand and majestic, casts its shadow over the city of Chu-Song, as it does over Peltó. From the piazza of my house in Chu-Song, the view of the mountain was surpassingly lovely. Immediately to the south there is a large orange and lime grove from which a delightful and refreshing aroma is exhaled, which touches our olfactories now and again, render-

ing the noisome air which surrounds our habitation all the more vexatious and insupportable. The afternoon sun casts its rays upon the mountain, causing it to appear quite near, while its topmost peaks, no longer cloud-capped, tower above the cloud rifts which have settled below, looking as if Halla-San was a grand highway to heaven itself. There is but little wonder, I said to myself, that these simple people should invest the great mountain with special sanctity. That these clouds are but vapor arising from the thermal sources in the mountain there is every reason to conclude, for I had noted the peculiar character and color of the clouds, which maintained a certain uniformity until the noon of each day, when the vapor ascended and left the summit bare for the rest of the day.

I was told that in the mountain there were three large lakes named, respectively, Pang Mok Tam, Tong-Chang-Ul, and Su-Chang-Ul.

The courtyard of my house in Chu-Song was crowded from morning until night with the people who struggled for place to get a sight of me. I tried in vain to secure some seclusion, and failing in this I turned the assemblage to account by endeavoring to secure some of the traditions of the people. With this in view, I engaged the master of ceremonies in conversation, adroitly provoking him to speak rather than to question, which would have effectually thwarted my object. Finally I brought him to the point. He said: "Halla-San is the home of a great spirit. No one can ascend to the top of the mountain, it is the home of a fairy goddess, and no one can see the face of the goddess and live. Our Governor for this reason, as well that the people would have been

angered, would not let you go. Halla-San," the old man continued, "is the beginning of the world; it was there man was first created. Yes," he said, "one day there came up out of the mountain three men, *Yang-ul-la*, *Ko-ul-la* and *Po-ul-la*, and stood each in the presence of the other; when they had recovered from their surprise they descended to the sea-shore, when lo! there appeared in the distance borne swiftly upon the waves a huge box which was thrown upon the sand at their feet. Yang, Ko and Po opened the lid when there jumped out *three* beautiful ladies. Of course they married them. They then returned to their mountain home, and there they found every sort of grain, fruits, fowls and animals. *Chae-Ju* was thus created, and after *Chae-Ju*, the world." "What about *Tanlo-Gook*?" (Kingdom of Tanlo)" I asked, anxious to discover if the ancient Mongol name had found a place in their traditions. To my surprise and delight, Mr. Shim replied: "*Chae-Ju* was once called *Tamna-Gook*, and at that time, many hundreds of years ago, was governed by a beautiful queen, who, besides being possessed of great strength, was also a great warrior. The king of Corea became very jealous of this queen, and sent his warrior, *Chae Chung Goon*, at the head of 300,000 men to subdue and capture her. The queen was able to defy the *Goon* until one day, having made sacrifices to Halla-San, the *Goon* was inspired to set fire to the trees and woods with which the island was covered, and the queen was killed, after which the *Goon*, when he saw the lifeless body of the queen, killed himself. From that day *Tamna-Gook* has been called *Chae-Ju*."

Tamna-Gook, it is evident by its similarity, is only another term for *Tanlo-Gook*.

"Did you ever hear of Hamel?" I asked, telling him the story as Hamel has described it. Shim shook his head dubiously and maintained that no white man had ever been in Chae-Ju. I insisted, however, that there had been, and that Hamel had been kept fourteen years a prisoner in Corea and had finally escaped. That it was 235 years ago, and one object of my visit was to discover some evidence of his sojourn in the island. I asked again if there had not been at some time a colony of Europeans in Quelpaert (referring to the Portuguese, reported to have had at one time a settlement in Chae-Ju). To all these queries I received an emphatic negative, and, lest I should be considered as quite demented, I insisted no longer.

The *séance* was broken up by the arrival of messengers accompanied by guards. These latter fell upon the crowd and drove them out of the inclosure, after which servants came forward bearing eggs, chickens, and other presents from the Governor. When the repast was concluded I requested Mr. Shim to clear the people out, for they had filed in again as soon as the soldiers had gone and filled every available space. Finally I was left to myself. Kim was ill with a fever and Chung was asleep. Opening wide the door and lighting a cigar, I threw myself upon my blankets and in a little while, overcome by fatigue, slept, disturbed again and again during the night by the violent ringing of the city bell to frighten away the evil dragons, or by the incessant raids made by an army of rats upon the debris of our unconsumed repast.

1st October.—At nine o'clock in the morning the Governor's guards came. Mr. Shim said he had been instructed to clear the streets, and preceded by the soldiers we sallied forth, passing rapidly to the southwest gate, thence to the east gate, and, finally, stopping occasionally to photograph with my camera a type of the people or a view of the city, we reached the south gate by which we had entered Chu-Song. By this time, notwithstanding the orders of the Governor and the vigorous blows inflicted by the *conjangs*, the streets became impassable by reason of the crowd. In vain the paddle men cried "*Naogimara*," get in your house! Having accomplished at length the real object of my *sortie* I gave the order to return to the house, where, having had *tiffin* (breakfast) at noon, I prepared to obey the summons of the Governor, to whom I had already announced that I would pay him my visit of adieu, since I hoped to return to Peldo that same day. The simple thought of another night in our abode gave me a spasm of horror, as it did both Kim and Chung; but their spasms were not exactly those of the olfactories, for their nerves generally had become a little unsettled by the unusual strain to which they had been subjected. Arrived at the Governor's residence I found him surrounded by his friends and eunuchs, a fact which will give some idea of the pretensions of this *Chae-Ju* governor, who was receiving with all the *rigueur* of a crowned head. It was not impolitic, however, for he had already informed me that the people were wild and ungovernable and that he feared them. A display of much authority, therefore, was necessary to keep them in check.

Through the lattice doors, in the rear of the room in which I was received, I could plainly see the forms of a number of females, who, I remarked, were much more robust and better developed than those seen in Seoul. As a matter of fact, they are far from good looking, their principal excellence consisting in a wealth of black coarse hair. The white eunuchs, on the other hand, are much better looking than the tall, lantern-jawed looking specimens of the black and neuter gender, which I had been accustomed to look upon in Egypt, but the Corean eunuch does not enjoy the full confidence or social status which is the privilege of the Egyptian eunuch, doubtless because his fidelity is not above suspicion, and because his neutralization is not so complete as that of the black. The Governor's eunuchs are a fat, feminine looking class, and apparently, quite happy and most vain of their gaudy robes.* It is said their lot is a subject of much envy and of jealous aspiration (?) among the lower classes. Several hours were spent in pleasant conversation with the Governor, whose embarrassment of the day before was replaced by a genuine cordiality, induced, without a doubt, by the prospect of my early departure. The inevitable *chow* was introduced, but having taken the precaution to breakfast, I begged to be excused. I then proceeded to photograph the Governor, who had donned his official dress for the occasion. When I had finished he desired very much to have a look at the picture, and could not be made to understand my refusal. On taking leave, the Governor caused a quantity of oranges, limes and *chun bocs* to be brought and presented to me,

* The Corean eunuch is always a married man.

as a souvenir of my visit. Quitting him, I returned with Kim to the house, where crowds were waiting to catch a glimpse of the foreigner.

At 4.30 P. M. the ponies provided by the Governor arrived. One word with reference to these animals, stories about which have done much to make Corea almost as marvellous as the land of Lilliput. For a fact the Chae-Ju pony is small, but I was told that the diminutive breed was only to be found in the adjacent island. When the luggage had been strapped upon the backs of coolies, we mounted our ponies and the escort preceding with music, banners and flags, we left the city by the east gate, to which point we were followed by a vast and ever curious throng which finally left us to make their way back to their homes, there to speculate and muse upon the stranger's apparition among them, and to weave no doubt another web in the maze of curious legends of a people, unnumbered and unknown as yet in the great world of which they are only nominally a part.

The march to Pelto was accomplished without incident. The road, unlike the one by which we had been led to the capital, was smooth and easy. The golden rays of the declining sun swept over the sea on our left and across our path, and rested on the sides of Halla San, where already the shadows of evening were gathering, rendering the scene one of peculiar beauty and grandeur.

As we entered Pelto we were again obliged to run the gauntlet of the curious throng, but the officer in charge cleared the way with his escort and with the aid of the inevitable *conjangs* we were soon arrived at our boat, where we were received with manifestations of joy by our imprisoned Japs, who were greatly disturbed by the

strict surveillance under which they had been kept by the authorities and the people. Bidding our escort adieu we went on board of the little *Bravo Maru*, happy to have successfully accomplished our proposed visit and glad indeed to exchange the poisoned atmosphere, which had in fact compelled our retreat from Chu-Song, for the pure air of the sea.

2d October.—The Prefect of Police came to see me the following morning and from his insinuating manner and hints I soon discovered that his visit was a begging one. I told Kim to give him some slight presents but nothing of value, unless we were allowed to camp on shore. The man asked for my blankets, and showed his ill humor when told point blank that he could not have them. The Prefect wanted medicine and he was given a quantity of quinine, cathartic pills, castor oil, and went away well pleased. When the people on shore discovered that I was a "medicine man," I was besieged by applicants who desired to be treated. My pharmacy was small and was soon exhausted, when I was obliged to have recourse to primitive remedies. For example, I treated their sore eyes with salt water, to which color and aroma were imparted by a few drops of mixture, *Eau Dentifrice*, which I took from my toilet bag.*

My limited pharmacy did not permit me to test fully the efficacy of my remedy whilst in Chae-Ju. Since

* I learned subsequently that my visit to Quelpaert has inspired the Missionaries with the idea that they may obtain a footing there, should they undertake to do so, I seriously recommend them to adopt the rôle of medicine men. The savage, whether Indian, African or Mongol, holds medicine in inexplicable awe. A bottle of croton or castor oil I have found in my travels to be a more potent "open sesame" to the savage heart than the finest elephant gun, if you are only given time to present these credentials.

our return from the capital we were again placed under surveillance and obliged to remain on our boat, from which during the day I succeeded in taking a number of views with my camera, attracting the attention of the people, curious to know the meaning of my looking into an instrument which they were told was to measure the height of Halla-San. When it seemed certain that the authorities would not permit me again to land, I resolved to return to Corea, and announced my intention to the captain and crew, who were very much elated thereat.

The pilot Yang Man Tuk had remained with us and it now became a question of what to do with him, for he had been threatened with violence by the people, who were angered that he should have brought us to the island. I proposed to land him some distance down the coast in order that he might avoid the residents of Peldo and reach his home, which he said was near the eastern end of the island. He claimed, however, that he could run the gauntlet of the town at night. Accordingly, Kim gave him a good round sum in small copper cash, which here as in Fusan and along the coast constitutes the currency, 650 being equal to one yen or Mexican dollar. Tuk was overcome by his unexpected good fortune; he wound the cash, which is strung upon cords though the hole in the centre, around his body, and after repeated bows and expressions of thanks he vanished in the darkness of the night and we saw him no more.

VI.—THE RETURN.

3d October.—At 3 A. M. of the 3d of October the captain awakened me to announce that the wind had

changed to the southeast and was blowing steadily from that quarter. "Let her go, captain," I replied, and in the bright moonlight we moved silently out of the port with not even the bark of the ever watchful dogs to signal our departure. Favored by a good steady breeze the little *Bravo Maru* sped swiftly on her homeward course, and at sunset without accident we had gained the lee of the Soando group, where we could breathe freely, for the real dangers of the journey were now practically passed.

5th October.—On the 5th we ran into the harbor of *Maje Mok* for fresh water.

6th October.—On the 6th we made To-Yong. To-Yong is the queen city of the Inland Sea of Corea, situated within a gorge of high hills and protected from the sea. The approach is through a beautiful bay, a good harbor of itself. The situation is delightful and well adapted with a fine shore to constitute a summer resort for good sea bathing. To-Yong, it is easy to see, will add materially to the revenue of Corea when it shall become an open port.

To-Yong possesses a number of well built Yamens and is the official residence of a mandarin. Whilst Chung was engaged in preparing tiffin, I went on shore with my camera and proceeded to photograph the harbor and city. Whilst I was at work, Kim made his way into the town to purchase an article of toilet without which a Corean does not exist—with dignity. Kim's hat had been smashed, and he was in such a state of mind that I was only too glad that an opportunity presented itself to purchase him a new one. Kim came back with his prize, but was very much flurried and said that the mandarin

had ordered him out of the town, and had also told him to say to the foreigner "that he must not come to To-Yong, that women were allowed to go about the streets, and he did not care to have them looked over by a foreigner." The audacity of the message angered me at first, but I laughed heartily a moment after, as I said: "Send back word to the mandarin, Kimmy, that he need have no fear for his old women, he can keep them and be hanged to him." But Kim would no more have sent my message than he would have hanged himself. Having secured a picture, I returned to the boat, first taking a delightful bath in the sea, and having breakfasted we set sail and were soon slipping along with a stiff fair wind.

The shore from this point is a succession of picturesque villages. On the flats may be seen great numbers of women, girls and boys, fishing for *nakgi*, a kind of devil-fish, greatly prized by the Coreans.

The wind died out with the sun, but my sailors, anxious to reach their homes, now stripped themselves of their clothing and taking the oars plied them vigorously during the entire night.

7th October.—The breeze came up with the morning sun and, making sail, we arrived at Fusan at noon.

Five hundred miles in a *sampan* under the conditions here recited, in the face not only of the ordinary dangers of the sea, but the always to be dreaded typhoon—a breath of which would have sufficed to have blown us into eternity—cannot be regarded as a pleasure promenade. When to this is added the successful visit and reception accorded us in the ever mysterious island of Quelpaert, the reader may understand the enthusi-

asm with which the *Bravo Maru* was received on our arrival by the brave and simple fishermen, who were not without a certain interest in the result, for it opened the door perhaps for them to fish and barter in the future.

At Fusan my journey had commenced, and returned, it ended there, so far as the *Bravo Maru* and crew were concerned. The Japs were paid off at once and with many genuflexions and *Siyinarahs à la Japonaise* they left me, to hie quickly to their families, whilst followed by Kim and Chung I sought my hotel, where I proposed to remain several days to await the arrival of the incoming steamers.

Fusan, in lat. $35^{\circ} 6'$ and long. $129^{\circ} 1'$ east of Greenwich, constituted as late as 1868 a fief of Tshushima, when it was added to Corea by Japan. The treaty of 1876 opened it to trade. It is in color, construction and population a Japanese settlement, and numbers 3,000 souls. The native Corean town is three miles distant at the head of the bay, but it is a mere collection of rude thatched huts. The port of Fusan is the most important in Corea and maintains a large export trade in cereals, beans, peas, hides, bones, sea-weed, fish, shark fins, *chunboc* and *chunboc* shells, grass cloth, etc.

The climate is mild and dry, and the place is the most or, rather, the only delightful place in Corea. Fusan is consecrated ground, and offers some inducements to the traveller student of history. It was here that the armies of the Tycoon, under the famous generals Konishi and Kato, landed on the 25th day of May, 1592, and on the same day invested and took the

celebrated castle of Tong-Nai, twelve miles distant, which still contains in its ruins some evidence of the invasion.

Twenty miles from Fusan on the sea is *Ulsan* where five years later the victorious army, besieged by the allied Chinese and Corean armies, resisted during an entire year, having given proofs of a heroism and valor which has made the Japanese name a terror to the Coreans.

On the 17th of October, having sent my attendants back to Seoul by the steamer bound to Chemulpo, I took passage on the steamer *Takachiho Maru* to Guensan, on the east coast of Corea in the Sea of Japan, and thence to Vladivostock in Eastern Siberia.

Siberia! At the very name a chill *tremor* runs through one's body, not only of cold, but because of its ill fame as the land of the exile. The island of *Saghalin* lies north of Vladivostock, and is one of the principal depots for the detention of exiles.

It is somewhat difficult to understand the transition to Siberia, for in imagination the way leads over barren steppes and by means of sleds drawn by reindeer over frozen snow. To have reached it so suddenly and by a short cut in an ocean steamer causes a lingering surprise, despite the chart on which I carefully noted the route.

Vladivostock is the prospective terminus of the Trans-Siberian Railway. Along the proposed route there is a post road and telegraph already, by which one may send a letter to Europe or America for five cents, or a telegram for five cents per word. The town is purely a garrison, Russia having constituted it a military and naval station. The civil population numbers

perhaps ten thousand, the Cossack soldiers and marines being an unknown quantity, although I was told that on an emergency Russia can mobilize twenty thousand Cossacks at this point.

During my stay in Vladivostock, I remained on the steamer in default of finding a decent hotel on shore. I was the only passenger, and with the genial Welshman, Captain Walker, I would not in fact have exchanged my quarters had there been a "Grand Hotel" in the town.

On the 26th of October the steamer left for Guensan. I was not sorry to quit Vladivostock. The place was gloomy and cold, it had all the chill which imagination had given it in advance, in fact, it was Siberia—as I had seen it in my mind's eye, and four days of Vladivostock with its skies and frigid temperature gave me more than enough of the place. At Guensan I was hospitably entertained by Mr. C——, the Collector of the Royal Corean Customs, and by Mr. B——, his deputy. On the 29th, having bid adieu to these gentlemen, and to Captain Walker, to whom I was indebted for his genial and sympathetic companionship, I set out to return to Seoul overland, a distance of one hundred and eighty miles. For this purpose I was provided with two pack ponies, one for my baggage and the other as a mount. The driver was a surly Corean, and the journey promised to be a lonely one, and so in fact it proved, not to mention the enforced close contact with coolies, fleas, and vermin of all sorts which swarmed in the foul and overheated kennels called *cahns*, the *inns* in which I was compelled to stop at night, which form the delight of the Corean.

A pleasant exception to this ordeal was the night of the first day's march, which I spent in the beautiful and romantic spot at the celebrated Buddhist monastery of Ampien, twenty-six miles from Guensan, where I was hospitably entertained by the jovial bonzes and by the venerable High Priest, Mr. "Suit-Ho," or "Snowy River," to whom I had a special letter of recommendation from Mr. Wo, the Chinese Consul at Guensan. For the rest my way lay along rough roads, over steep mountains, and now and then through the placer gold diggings, a few of which were being worked, though in a most primitive manner.

On the second day I passed on my left a mountain from which a dense column of vapor ascended, and gathered from my guide that it emanated from boiling springs. On the following morning, having climbed a very steep mountain, I discovered in the descent, and flowing from the mountain side, a source which I followed for several hours, when it widened into a bold, rapid stream, one of the principal sources of the Han River, now visited for the first time by a white man.

On the 4th November, at noon, I arrived in Seoul, having accomplished the distance across Corea of 180 miles in the short space of six and one-half marching days, and chiefly on foot, for my pony had gone lame on the second day's march from Guensan.

His Majesty, Li, King of Corea, when informed of my return, requested me to meet him in a private audience, and accordingly, on the 10th November, I was received at the palace where, surrounded by his eunuchs and mandarin councillors, the king listened with eager attention to the account of my adventures in Chae-Ju,

and when I had finished he questioned me closely as to the proper measures to be adopted to protect the island in a military sense.* In this connection I should add that His Majesty, on two occasions since my residence in Seoul, had proffered me the command in chief of the Corean army, but I had respectfully declined that honor, chiefly because I believed it to be *infra dig.* whilst holding office under the United States Government to accept office under a semi-barbarous government, to say nothing of the poor results which such service attained as a rule, by reason of the jealousies and animosities provoked on the part of the native element. It was, however, my proud privilege, in recounting to the King of Corea the substance of the foregoing expedition, to add a page to the unwritten history of an island and people almost unknown to the sovereign himself, and terminate thus with this pleasant episode my journey from Corea to Quelpaert in the footprints of Kublai Khan.

* Subsequently, and when I had resigned my post, I was accorded a lengthy and pleasant interview with the Secretary of State, who among other things desired to learn my opinion in regard to the concessions to be obtained from Oriental governments and which seemed to be the objective of many of our representatives to those governments. Some of them, as the Secretary well knew, were even then using their official position to secure for themselves lucrative offices under the governments to which they were accredited. Reply having been made that such action was discreditable to the United States Government, and should be made a subject of rigid action on the part of the Department, the Secretary related a case apropos to the matter where a gentleman, a United States Minister returning from his post, stopped in London and went to see Lord Salisbury, and after reciting at great length the sum of what he had succeeded in obtaining, Lord Salisbury exclaimed: "Well, Mr. Minister, I hope you have left the air in that country." It is to be assumed that the rebuke was not lost upon our countryman.

VOLCANIC ERUPTION IN THE BERING SEA.

By permission of Professor Mendenhall, Superintendent U. S. Coast and Geodetic Survey, Professor Davidson furnishes the following information concerning the uprising of volcanic islets in the Bering Sea.

THE RECENT VOLCANIC ERUPTION OF BÓGOSLOV.

The volcanic islet St. John Bógoslov, or "Old Bógoslov," lies in the southern part of the Bering Sea, thirty-seven nautical miles west by north from the north-western point of Unaláska Island, and twenty-nine miles north-north-west from the northern point of Umnak Island. Its geographical position is latitude $53^{\circ} 57'$, and longitude $168^{\circ} 00'$ west. It is therefore forty-four miles west from the living volcano of Makúshin, which is 5,691 feet above the sea. It has been frequently seen in eruption since Cook passed it on the 29th of October, 1778, at a distance of eleven miles to the south-east. At that time Old Bógoslov had the Ship Rock lying a short distance to the north-west, and doubtless connected with it.

Between 1823 and 1888 there were no signs of eruption reported, when a new and much larger islet was raised, with an exhibition of flames, smoke, steam and ashes from the deep water to a height, then estimated from 800 to 1,200 feet, but which has settled down to about 700 feet.

It may however be of interest to refer chronologically to this and the immediately adjacent volcanoes in bring-

ing up the history of Bógoslov, from Greywink, Weniaminoff, Tebenkof and others :

- 1768. Volcano Makúshin on Unaláska Island and the other volcanoes active. Bógoslov seen by Levasheff.
- 1778. Bógoslov seen by Cook, showed no signs of activity.
- 1790. Volcano Akután on Akután Island, 3,888 feet high, and distant 76 miles E. by N. from Old Bógoslov, smoking; Makúshin in activity at intervals to 1792.
- 1796. Old Bógoslov reported to have risen from the sea : probably great changes took place that year.
- 1800. Old Bógoslov was increasing in size from this date to 1815.
- 1802. Makúshin in eruption, vomiting forth great fires; earthquakes : Bógoslov smoking, hot geysers.
- 1826. Makúshin smoking; two heavy earthquakes in June.
- 1830. Volcanic eruption at the south-west end of Umnak Island in August.
- 1838. Makúshin and Akután smoking.
- 1844. Makúshin smoking feebly.
- 1852. Volcanic eruption on the north-west side of Akután. (Archimandritoff.)
- 1867. Makúshin and Akután and Shisháldin smoking. Earthquake at Iliuliúk in March; great cracks in the earth visible in September; Davidson's party made first ascent of Makúshin and determined elevation.

1883. Old Bógoslov quiet, but the New Bógoslov, five or six times the area and much higher, rose to the north-west of Ship Rock and connected therewith. (Captains Hague and Anderson of Alaska Commercial Company to Davidson.)
1884. The New Bógoslov is covered with steam jets, and is connected with Ship Rock and old Bógoslov with gravel isthmus. The Ship Rock nearer the New Bógoslov. The New Bógoslov is about 700 feet above the sea, and can be ascended but a short distance in one or two places. (Captain Healy, and Lieut. Doty, U. S. Revenue Marine to Davidson.)*
1888. Since 1884 the Captains of the Alaska Commercial Company have repeatedly reported to Davidson that the New Bógoslov has been decreasing in height. It has been repeatedly photographed, particularly by officers of the U. S. Revenue Marine, and by Captain Nichols, U. S. N., on Coast Survey duty. Captain Nichols ascended some distance in 1888, when it was still hot and smoking, and the whole surface crumbling to ashes and falling away. He measured the height, nearly 700 feet.

This was the condition of the volcanic islets until the 10th of February, 1890, when a sudden eruption took place, and the great light and clouds of pumice ashes filled the sky. The 17th and the 22d were also marked by great activity; and *from the Village of Iliuliuk the*

*For views, charts and description, see Appalachia No. 1., Vol. IV.,; Science Vol. III., p. 282.

flames were seen over the crest line of Makúshin: and angles of elevation were measured by Mr. Applegate to determine the height of the volumes of smoke and ashes. Iliuliúk is twelve nautical miles east of Makúshin, so that this volcano lies directly in the line between the village and Bógoslov. If we assume that the flames seen over Makúshin were the highest exhibit of the eruption, their elevation would be about five miles; the measurements further indicated that the ashes and clouds of steam rose to an elevation of over fourteen miles.

Mr. Neumann, the Agent of the Alaska Commercial Company at Iliuliúk, Unaláska, writes to the Company, as follows:

"The past winter has been mild. Bógoslov has been very active during the winter. On February 10th, 17th and 22d ashes were blown to this place, of which I forward sample. On the last mentioned date a column of smoke was observed here, estimated to be 15 miles high. The old island is reported to have been raised considerably, and new land has risen from the sea." Captain Erskine brought a bottle of these ashes to Davidson. He was at Tchernikoff Bay, and reports:

"The Old Bógoslov lies 40 miles N. 35° W. from the mouth of the bay, which is situated on the north side of Unaláska Island, 11 miles from its southwestern extremity and 8 miles from the eastern face of Umnak Island. The natives formerly could see the Old Bógoslov, and the New, on rare occasions, when the weather was very clear; now they see the mass very plainly under similar circumstances. This would indicate the new islets as being over 1,000 feet high. They report that there are

three new islets formed by this last eruption, and that they are close to, but not connected with, the Old Bógoslov."

The Aleuts have been terrified at all their villages on Unaláska, and they recall the traditions which relate much suffering to have occurred to them after great convulsions and earthquakes among the Islands. In the present case they report that the great flames shot high into the sky, and that great masses of burning matter were thrown outwards from on high and fell into the ocean, whence columns of steam arose.

Captain Everett Smith was cod-fishing in the steam whaler *Balena* to the northward of Cape Cheerful, Unaláska Island, and saw the eruption, which he is reported to describe as resembling a great city on fire; but it is not known whether he saw the first outbreak. The Pacific Whaling Company has no letter from him, but he is reported as saying that there are four new islets detached, but near the former Bógoslovs.

Captain Erskine reports that all the snow covered mountains of Umnak, Unaláska and Akután were so thickly covered with ashes that they were lead colored. These ashes did not reach eastward and northward to the tidal station of the United States Coast and Geodetic Survey at St. Paul, Kadiak Island; nor was any unusual phenomenon noted there. On the contrary, the month was a remarkably pleasant one. The ashes collected at Iliuliúk have, according to Davidson, a fair percentage of magnetic oxide of iron, as might be expected.

It should be noted that these new islets must have risen from profound depths. South of the old Bógoslov

there are depths given over 800 fathoms; and about twelve miles away to the north and west there are depths reaching 1,200 fathoms, or more than one and one-third miles.

It is understood that the eruption had somewhat subsided, when the news was sent from Iliuliúk in the latter part of April,

GEORGE DAVIDSON.

SAN FRANCISCO, June 2, 1890.

GEOGRAPHICAL NOTES.

VERRAZANO'S VOYAGE.—Prof. Karl Lechner has told the story of Verrazano in Nos. 8, 9 and 10 of *Globus*, for 1890. He traces the history of the Verrazano family back to the 13th century, when it was already solidly established in the lordship of Verrazano, a few miles to the south of Florence.

Not much is known of the discoverer's life. A chronicle of doubtful authority mentions him as settled in Dieppe in 1508. It is certain that he was in the service of Francis I. in 1521, when he captured a Spanish ship with a precious cargo; and that in 1523 he attacked, near Cape St. Vincent, and took two of the three caravels, in which Cortés had sent the treasure of Montezuma to the Emperor Charles V.

This incident, unrecorded by Peter Martyr and Herrera, is told by Alonso de Avila, who was captured in the fight with Verrazano, in a letter written on the 17th of June, 1523, from his prison in La Rochelle to the Emperor. Other documents of the time show that Verrazano's fleet at first consisted of four vessels, with which he was to make his discoveries for the King, "towards China." Two of the ships were lost in a great storm in the "northern part of the Atlantic Ocean," and the others put back in a damaged condition to the coast of Brittany.

The capture of the Spanish caravels was an episode,

and the original enterprise was resumed, but only with one vessel, the *Dauphine*, which left France, it is supposed, in December, 1523, though it is only known that on the 17th of January, 1524, Verrazano set sail with a crew of 50 men from the neighborhood of Madeira.

Dr. Lechner leaves the voyage at this point, in order to follow the subsequent career of the navigator. His report to the King is dated the 8th of July, 1524. Francis was expected at Lyons on the 4th of August, and Verrazano's countryman, Carli, who was then living in that city, wrote on that day to his father at Florence, enclosing Verrazano's report, with the remark that the discoverer would soon arrive in Lyons, and that it was hoped the King would furnish him with a half-dozen ships for another and more considerable voyage.

Verrazano must have reached Lyons about August 4, and by sea, for Peter Martyr writes from Valladolid, on the 3d of August, that a "courier of the Portuguese King's has arrived with the news that a vessel from the Indies, with a cargo worth 180,000 ducats, has been captured by Verrazano."

Nothing came of the plan for a new voyage, the King's attention being absorbed by the struggle with the Emperor, which ended for a time with the battle of Pavia and the captivity of Francis. Verrazano next applied to Henry VIII., but without success.

An undated document, brought to light by Margry,* records an agreement between Philippe de Chabot,† "Admiral de France et de Bretagne," Jehan Ango, Guillaume Preudhomme, "général de Normandie,"

* "Navigations Françaises," p. 194.

† Dr. Lechner makes this historical name unrecognizable by writing it *Cabot*.

Pierre Despinolles, Jacques Boursier, and "messire Jehan de Varesam" (Verrazano), for an expedition to the Indies, to be commanded by Varesam. This document cannot be dated earlier than 1526, in which year Philippe de Chabot was made Admiral.

Mr. Henry Harrisse has found in the archives of the Parlement at Rouen two papers executed by Verrazano, the one on the 11th, the other on the 12th, of May, 1526; both relating to the projected Indian voyage, of which nothing more is known. In October, 1527, a dispatch informed the Emperor that Verrazano had been captured, with his ship's crew of 130 men, by a Biscayan squadron.

This may have been on the return from the Indian expedition. Verrazano offered 130,000 ducats as a ransom, and the Portuguese bid large sums for his delivery to them. The offers were rejected, and the Biscayans took their prisoner to Cadiz, where they received an order to send him to Madrid. On the way he made a fruitless effort to escape. A second order from Charles doomed him to death, and he was hanged on the 13th of October, 1527.

Dr. Lechner takes the details of Verrazano's voyage to the west from the text of Ramusio. Setting sail on the 17th of January, 1524, the voyager sighted land on the 10th of March, in 34° N. Lat. This is nearly the latitude of Cape Fear, on the coast of North Carolina. Verrazano sailed about 50 leagues* to the south, searching in vain for a good harbor, and then put about to the north. His first landing was made at a place covered with fine sand, and rising inland in little hills.

* These leagues are variously estimated at 15, 18.75 and 20 to the degree.

Still farther up the coast he found the shore cut up by a number of little streams and arms of the sea, and beyond this point were wide plains and broad stretches of forest. This is a fair description of the coast between Onslow Bay and Cape Lookout, and the first landing was probably at New River Inlet. Following the coast, which turned more to the east, Verrazano sent men ashore for water. This must have been a little to the south of Cape Hatteras. After sailing 50 leagues farther, the land now trending to the north, Verrazano cast anchor and lay for three days at a place where he saw many canoes made of single logs, 20 feet in length and 4 feet broad, and hollowed out by fire, without the help of iron or stone; and in all the 200 leagues of his coasting he had not seen a stone. This anchorage ground Dr. Lechner places at about 38° N. Lat. Sailing now by day, in a northeasterly direction, and anchoring by night, Verrazano came in another 100 leagues to the mouth of a very great river, flowing out between small steep hills, and affording an entrance fit for the largest ships; and he ascended this river for about six leagues. Every point in his description of the entrance, and the river, and the "most beautiful bay" (lago), applies to New York. He continued along the coast, now lying east and west, for about 50 leagues, and came to a triangular island, 10 leagues from the mainland, and in size like the island of Rhodes. To this island he gave the name of *Luisa*, in honor of the king's mother. This, the only instance of a name bestowed by Verrazano, was changed by the cartographers to *Claudia*, the name of the first wife of Francis. Dr. Lechner identifies *Luisa* with Block Island for the rea-

son that this agrees with the distances reported in Verrazano's letter, and also with the position assigned to *Luisa* on Girolamo Verrazano's chart, where it lies to the south-west of Narragansett Bay, described by the navigator as an admirable harbor, half a league wide, where it opens to the south, and expanding within to a bay of 20 leagues in circuit, and inclosing five islands. The latitude he gave it was that of Rome ($41^{\circ} 40'$, as then understood), and this agrees well enough with the latitude of Newport ($41^{\circ} 29'$); and local conditions, he found, made the climate colder than that of Rome.

All the evidence from the letter of Verrazano and the chart and the physical facts is in favor of this, rather than of Kohl's identification of Luisa Island with Martha's Vineyard.

Fifteen days were spent at Narragansett Bay, and the voyage was resumed on the 5th of May, and continued, always within sight of the coast. For 50 leagues the direction was to the east, and then for 100 leagues to the north. This brought the ship to Cape Cod, and Verrazano found to the north a high land covered with pines, cypresses, and other trees peculiar to northern countries. The natives previously seen were friendly, but in this place they kept aloof.

The trend of the coast from this point was to the north-east, and the voyagers came to a fair, open country, with high mountains in the interior, and kept on their course for another 50 leagues along what must be recognized as the coast of New Hampshire and Maine. Verrazano counted 32 small islands near the land, with fine harbors and channels that reminded him of those in Slavonia and Dalmatia. Sailing still to the north-

east for 150 leagues more, Verrazano came to a country discovered, as he writes, in past time by the Bretons. This was in Lat. 50°, and, therefore, on the north-eastern coast of Newfoundland; and here the voyage of discovery ended. So, at least, Dr. Lechner is inclined to believe.

Verrazano's letter does not mention his brother Girolamo, and the latter dates his chart only by a reference in the description of the land discovered by Giovanni: "Verrazana, or New Gaul, which Giovanni da Verrazano, of Florence, discovered five years ago by order and command of the most Christian King of France."*

Dr. Lechner takes up and combats with vigor the charge of falsification, first brought against Verrazano by Buckingham Smith, and afterwards urged "more keenly and with much greater unfairness,"† by Henry C. Murphy.

Murphy's arguments are chiefly of a negative character. De Costa has shown that Verrazano was not the only navigator who failed to discover the Chesapeake and Delaware bays. He makes no mention of wampum or of tobacco, but neither does Ribault (1562), nor Ingram (1568), nor Barlow (1585), nor Pring (1603), nor Popham (1607), know these words. Verrazano, nevertheless, describes "a broad chain, ornamented with many stones of different colors,"‡ worn around his neck by the old king of the natives, in the

* Verrazana sive nova gallia quale discopri 5 anni fa giovanni da verrazano fiorentino per ordine et Commandamento del Cristianissimo Re di Francia.

† Some of Dr. Lechner's expressions would have been softened, had he known that Mr. Murphy was no longer among the living.

‡ una catena larga ornata di molte pietre di diversi colori.

neighborhood of Newport; and this chain must have been a wampum collar.

It is well known that Murphy regarded the Verrazano text, given by Ramusio, as falsified, and maintained that the other, which is called the Magliabecchian, was the original, or, at least, a more trustworthy copy of the original.

Dr. Lechner shows, by a comparison of expressions and passages in the two, that the text of Ramusio is in every way to be preferred, as regards both language and sense, to the Magliabecchian. The latter is evidently the work of a writer very little acquainted with the Italian language, and the sixty examples quoted from it by Dr. Lechner are nearly always unidiomatic, and very many of them are Latin and French words and forms.* Frequently the writer did not understand the text he was copying, as in this instance:†

* A few instances will suffice :

RAMUSIO.

scoglio.
a prima vista.
perchè
ricchezze.
fortuna aspra.
ad arrivare.
con poca pioggia.
fastidioso.
per condurlo in francia.
grandissima fiumara.
ponente.
tramontana.
mare.
fuocho.
Lombardia.

† una cintura d'herba stretta et ben
tessuta, et con varie code d'altri
animali adornata.

MAGLIABECCHIAN.

scopulo.
al principio.
che.
divitie.
turmenta.
a posare.
con rara pluvia.
infesto.
menare in francia.
grandissima rivera.
zeffiro.
settentrione, aquilone.
pelago.
quarto elemento.
Cisalpina Gallia.

una cintura d'erbe tessute con
code di altri animali.

"(The inhabitants wear) a girdle of grass, narrow and well woven, and adorned with various tails of other animals." This passage is rendered in the Magliabecchian: "A girdle of grasses woven with tails of other animals."

In Ramusio, Verrazano turns homeward, having discovered "seven hundred (DCC) leagues and more of new country." This appears in the Magliabecchian as five hundred and two (DII) leagues. Where in another place Ramusio reads 500, the other text has 800. In Ramusio a storm occurs on the 20th of February, which becomes the 24th in the other text. The natives of the new country are described in Ramusio as "red in color and not very unlike the Saracens."* The Magliabecchian makes them "black in color, not unlike the Ethiopians." Verrazano found in one place in the spring time some grapes, the dried fruit of which was sweet to the taste; but the word *secco* (dried), which makes the statement plain in Ramusio, is omitted in the Magliabecchian, and this has supplied an argument to Mr. Murphy.

His strongest reliance is, however, upon Verrazano's supposed obligation to the cartographers, whose work he appropriated. Chief among these is Diego Ribero, who derived his information from the Portuguese Estevão Gomez. "How does it happen, then," asks Dr. Lechner, "that where Ribero marks on his chart the Bay of Santa Maria and San Christoval,† Verrazano found nothing? The coast was the same to both explor-

* Sono di color berrettini et non molto dalli Saracini differenti.

† This is the Spanish form given by Ribero. Dr. Lechner writes it in Italian, *Christoforo*. Why not in Greek?

ers. Where Verrazano hopes to find gold, Ribero declares that there is none; and Verrazano's $41^{\circ} 40'$ is in Ribero 44° N. Lat."

Mr. Murphy affirms that Verrazano and Ribero commit the same mistakes in estimating the distances from New York to Cape Cod and thence to Cape Sable; but the name of Cape Cod does not appear on either map, for the reason that it was not known till Gosnold's voyage in 1602. Murphy assumes that Cape Cod is Ribero's "Cabo de muchas islas," but this designation in Ribero agrees with the Rio de las Gamas, of Cespedes, and Murphy, in another place, identifies this with the Penobscot.

Ribero must be right, according to Murphy, because he follows Estevão Gomez; but what is the authority of Gomez? The contemporary Spanish writers give only the briefest notices of him, and mention neither the northern nor the southern limit of his voyage, nor any gulfs or harbors or sounds that he discovered. Kohl says on this subject: "In respect to all the particulars of his voyage we are left to probabilities."*

Verrazano must have been aware, says Mr. Murphy, that when he reached 50° N. Lat. he was on a coast already known to the Bretons, for he himself had been there with Aubert in 1508. It cannot be said that he made a mistake as to the coast, for he came with his people from Dieppe, and must have recognized regions frequented by Norman and Breton and Portuguese fishermen. The answer is, in the first place, that Verrazano uses the word *scoprire*, as English seamen of the time used the word *discover*, in the sense of *to sight, to*

* Kunstmann, Entdeckung Amerikas, München, 1859, s. 276.

reach, and never in the sense of finding a previously unknown region. This latter meaning he expresses in a way not to be misunderstood: "(I saw) a region never seen before by any one, in ancient or in modern times."*

As for the fishing ground, Dr. Lechner quotes from Ribero's map an inscription to this effect: "Lands of codfish ——— there is there nothing of value but the fishery of the codfish, which are of little worth."†

Dr. Lechner's copy of the Ribero map does not agree with the facsimile, reproduced from the original in the Propaganda by W. Griggs, of London, in 1887. In this facsimile there is, in the portion of the New World north of the Gulf of Mexico, but one inscription that resembles Dr. Lechner's quotation and this one reads: "New Land of Corte Real, in which there is nothing of value other than fishery of codfish and much pine timber."‡

Mr. Murphy has made it a reproach to Verrazano's memory that he was hanged as a pirate; but a name is often a matter of convention. Many famous Englishmen would have met the fate of Verrazano if they had fallen into the hands of the Spanish king.

If Verrazano was not only a pirate but an impostor, it must be allowed that he was a very ingenious impostor, for he succeeded in deceiving, not only Frenchmen and Italians, but also the Englishman Hakluyt; and he did even more. He was able to smuggle into the Portuguese archives a dispatch of the Portuguese Envoy

*Aver veduto una regione non mai stata veduta da alcuno nè negli antichi nè nei moderni tempi.

†Tierras de los bacallaos. . . . non han alla cosa de provecho mas de la pescaria de bacallaos, que son de poca estima.

‡Tiera Nova: de Cortereal' enla qual no ay otro provecho que pescaria debacallaos y mucha madera de pinos.

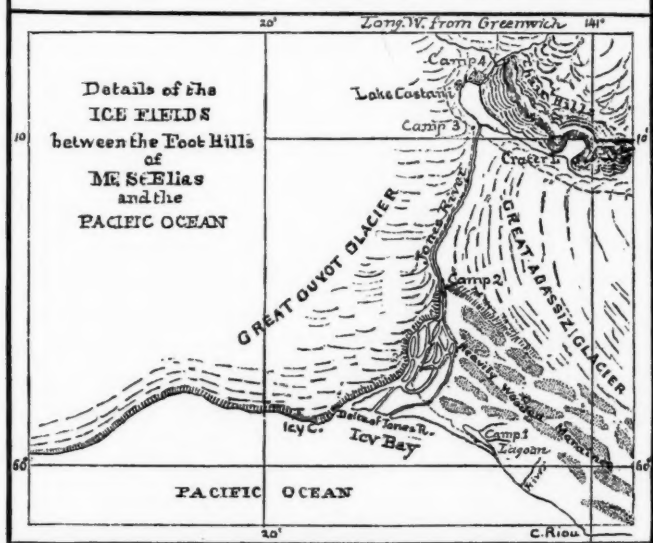
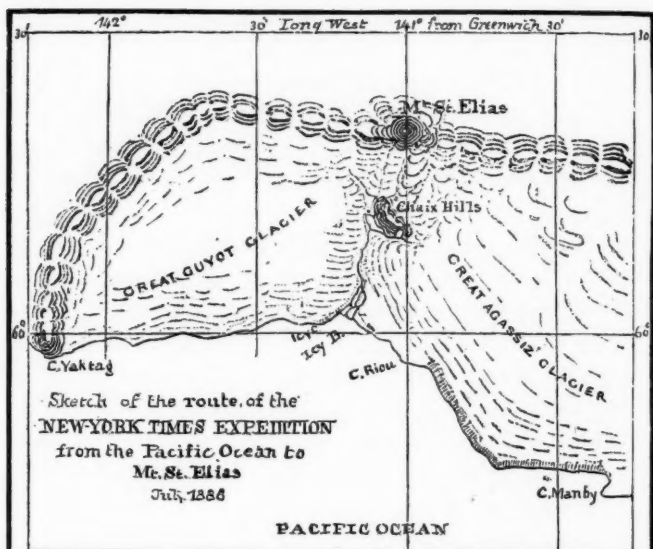
Silveira, and into the Parliament archives at Rouen the two documents of the year 1526, as well as to forge the contract with the Admiral Chabot and Jean Ango. Yet more: he must have forged the recently discovered papers which show that Francis I. was expected at Lyons on the 4th of August, 1524, and that Charles V. issued an order for the execution of Verrazano himself. So great was his craft that, without having visited them, he knew that the Narragansett Indians lived under two kings, who were uncle and nephew, just as they did afterwards in the time of Roger Williams.

Verrazano's voyage, says Dr. Lechner, in conclusion, is a piece of history as real as the work of Livingstone or of Stanley.

THE TOPOGRAPHY OF MT. ST. ELIAS. — The latest volume (No. XV.) of the *Nouvelle Géographie Universelle* treats of Northern America, that is to say, Greenland, the Polar Archipelago, Alaska, the Dominion of Canada and Newfoundland. These regions are but little known, and it will take time to accumulate exact information concerning any one of them. Every acquired fact must be registered as common property, and theories must be treated as theories, if any advance is to be made. In his account of the Mt. St. Elias region, in Alaska, M. Reclus does not seem always to have kept these points in view.

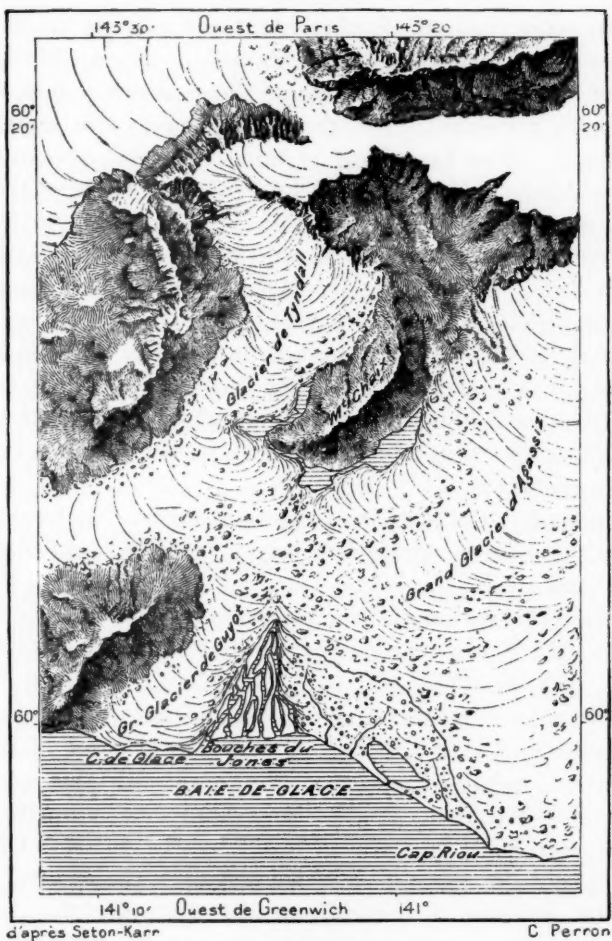
Mt. Edgecumbe, for instance, which is spoken of on pp. 193-194 as an independent volcano, is a parasitic cone on the side of a much larger crater.*

* See article on "Some of the Geographical Features of South-eastern Alaska," by William Libbey, Jr., in *Journal Am. Geog. Soc.*, Vol. XVIII. (1886), p. 284.



From Journal Am. Geog. Soc., 1886, p. 287.

N° 43. — VERSANT MÉRIDIONAL DU SAINT-ÉLIE.



From *La Nouvelle Géographie Universelle*, Vol. XV., p. 197.

On page 195 M. Reclus mentions a large circular space in the form of a crater, about half way up Mt. St. Elias, below the escarpments on the south-west side, as probably a volcanic vent, though he leaves the matter in doubt. The formation is none the less decidedly non-volcanic. It was found by Professor Libbey* that the moraines of the glaciers, directly traceable to the amphitheatres on the western side of Mt. St. Elias, must have had a glacial origin. Mr. W. Williams, whose article in *Scribner's Magazine* for April, 1889, is quoted by M. Reclus, describes the crest of the amphitheatre as "covered with schists," a rock that does not belong to volcanoes; and rock specimens brought by him from the crest, and analyzed, show nothing of a volcanic character.

The map on page 197, reproduced by M. Reclus, from the map in Mr. Seton Karr's "Shores and Alps of Alaska," is not to be trusted. It represents the Chaix Hills twisted at an angle of 45° from their true line. Mr. Seton Karr's topography is not to be reconciled with Mr. Williams' view† of Mt. St. Elias at the right-hand end of the Chaix Hills, and his description, nor with Professor Libbey's "long, gentle slope of the glaciers leading directly to the giants of the main range."‡ The rocky space shown immediately north of the Chaix Hills is really covered by the Libbey Glacier,§ and the mountain, which occupies the centre of the Guyot Glacier, is not there in fact; while the continuation of the glacier behind should be a series of

* *Journal Am. Geog. Soc.*, Vol. XVIII., p. 297.

† *Scribner's Magazine*, April, 1889, pp. 394-395.

‡ *Journal Am. Geog. Soc.*, Vol. XVIII., p. 296.

§ So named by Mr. H. W. Topham, *Proceedings Roy. Geog. Soc.*, 1889, p. 428.

glaciers, moving out towards the Agassiz. There is in M. Reclus' map no indication of a meeting between the two great glaciers, the Agassiz and the Guyot, except at Lake Castani, while they should meet as in Professor Libbey's map; and the Agassiz appears to turn towards Cape Riou, a point it never reaches. M. Reclus accepts with an implied protest "the trivial name of Jones River, given by the Anglo-Saxon visitors to the Yahtsé."* The name *Jones* is less beautiful and also less Anglo-Saxon than some other names, but M. Reclus will have his hands full, if he means to go through the nomenclature of the Western Continent with a protest against every form that may be accused of triviality. To put only one case, because, like that of Jones River, it is recent; can any name be more trivial and more out of place than that of the "Ferdinand de Lesseps Mountains," superfluously given by M. Chaffanjon to the Sierra Parima? M. Reclus is logically bound to free his mind concerning the French visitor to Venezuela. There is some doubt as to the meaning and the form of the native name for the Jones River, if there is such a name. *Yahtsé* is a Thlinkit word, which Mr. Topham renders by *swampy* or *muddy*,† and Professor Libbey (in a letter) by *cold*. It is a right principle to prefer native names, but most explorers do not obey it, and the Anglo-Saxon visitors to Mt. St. Elias, in 1886, having named a range of hills and two glaciers after eminent Swiss men of science, and a lake after a distinguished Italian, ventured to remember the American patron of their expedition.

* "Ce cours d'eau, le Yahtsé, auquel les visiteurs anglo-saxons ont donné le nom banal de Jones-river." *Nouv. Géog. Universelle*, Vol. XV., pp. 197-198.

† *Proc. Roy. Geog. Soc.*, 1889, p. 432.

It must be thought that M. Reclus has attached too much importance to Mr. Seton Karr's experiences in Alaska. This gentleman does not seem to have impressed those who travelled with him with the solidity of his acquirements, or the earnestness of his purpose; and Prof. Geo. Davidson's letter, published in the *Proceedings* of the Royal Geographical Society for 1889, p. 611, convicts Mr. Seton Karr of something less innocent than flimsiness or carelessness.*

THE HISTORY OF THE NIAGARA RIVER.—The report of the Commissioners of the State Reservation at Niagara, for the year 1889, contains an Essay by Mr. G. K. Gilbert, on the History of the Niagara River. It is difficult to say anything new on such a subject, but Mr. Gilbert has brought together all that is known, or thought to be known, concerning the great Fall, and the causes that have made it.

The region of the Great Lakes, says Mr. Gilbert, is likewise a region of small lakes. In the same region waterfalls abound, while, south of the Ohio, lakes and cataracts are rare. At the south the drainage system is old; at the north it is young. The explanation of this lies in a great geologic event—the age of ice.

During the ice age the region of the Great Lakes was somewhat in the condition of Greenland. It was covered by an immense sheet of ice, and the ice was in motion, in general, from north to south.

* Professor Davidson has noted the following corrections of typographical errors in his letter:

On line 28, *p.* 62 should be *p.* 142.

On line 29, *lat.* 60° 22' 6" should be *lat.* 60° 22' .6.

On line 29, *long.* 140° 54" should be *long.* 140° 54'.

The climate at the southern margin of this ice sheet was relatively warm, and the ice, pushing into this warmer climate, was dissolved, with variations of advance and retreat, caused by the character of the seasons, and the irregular hills, known as the *drift deposit*, were the result. The surface was changed by these deposits and by the erosive action of the ice, and where the ice disappeared the rain that fell could no longer follow old lines of drainage; and so the whole water system was refashioned. In this way the Niagara River was born.

When the ice front had receded so far that it lay to the north of the uplands, which divide the basin of the Great Lakes from that of the Mississippi, but had not yet receded from the Adirondack Mountains, the water from the melting glacier could not escape by way of the St. Lawrence River, but gathered in the form of lakes between the line of the uplands and the ice front. One of these lakes occupied the western portion of the basin of Lake Erie, and has left distinct marks of four changes in its channel of discharge. Lake Erie and Lake Ontario were first separated when the retreat of the ice from the Ontario basin left the accumulated water to flow out by way of the Mohawk Valley, so that the level of discharge was suddenly lowered 550 feet.

The Niagara River began its existence during the series of events that closed the ice age in North America. Its great work has been the digging of the gorge through which it runs from the cataract to Lewiston. In the main, the material dug has been hard limestone and sandstone, interbedded with a coherent though softer shale; but for a part of the distance the material

was incoherent drift. The order of succession of the layers is: a loose sheet of drift, then a bed, eighty feet thick, of Niagara limestone; then the Niagara shale, fifty feet thick; then for thirty-five feet an alternation of limestone, shale and sandstone, known collectively as the Clinton group. This reaches down very nearly to the water's edge. Beneath it, and extending downward for several hundred feet, is a great bed of soft, sandy shale, interrupted, so far as is known, by but a single hard layer, a sandstone ledge, varying in thickness from ten to twenty feet. The hard layers project as shelves and the softer layers are eaten back by the Fall.

The rate of retreat of the Horseshoe Fall is the rate at which the gorge of Niagara grows longer. This rate is not positively known, but Mr. Gilbert is led to believe that it is between four and six feet per annum.

Old as the Niagara River may be, its history is interwoven with the history of man; for, on a gravelly beach of Lake Iroquois (the name proposed by Professor Spencer for the body of water that once occupied the bed of Lake Ontario), there have been found evidences of his presence in a hearth, with ashes and charred sticks.

IDENTIFICATION OF FRANCIS DRAKE'S ANCHORAGE ON THE COAST OF CALIFORNIA.—The question of Drake's second anchorage, decided by Dr. E. E. Hale* in favor of San Francisco Bay, is definitively settled by Prof. George Davidson, of the U. S. Coast and Geodetic Survey, in a paper read before the California Historical

*"Narrative and Critical History of America", edited by Justin Winsor, Vol. III. not (Vol. II. as erroneously noted on p. 22 of the *Identification*), pp. 74-78.

Society in March, 1889, and published by the Society in April of this year. It was not in San Francisco Bay, but under the eastern promontory of Point Reyes Head, that Drake anchored.

In the first two or three years of his work upon the Pacific coast, beginning with the year 1850, Prof. Davidson believed that Drake had entered the Bay of San Francisco; but a closer acquaintance with the physical facts and with the records has brought him to a sounder conclusion.

He says: "I have carefully studied the narratives of Drake's voyage, and the manuscript charts copied from his sketches, or drawn from his personal descriptions; have located his first anchorage; know every foot of the shore he coasted; have tried to see it with his eyes; have sailed the U. S. Coast Survey Brig *Fauntleroy* over the very track he pursued; have conned the shore line, and the crest line, and the landfall from seaward, under varying circumstances of weather; have surveyed Bodega Head, and anchored in Bodega Bay; have been over every rod of Point Reyes Head several times, and have frequently anchored in Drake's Bay in pleasant weather, and under stress of weather, even as lately as last year (1886). I have visited the South and North Farallones, measured their heights, and studied their relation and visibility to the harbor in which Drake anchored. . . . Furthermore, when I look over the list of authorities at my command, that have given opinions upon the subject, some for and some against San Francisco Bay, I fail to note one who was personally familiar with the details of all the localities involved; with the advantages of Drake's Bay as a harbor of

refuge in any storm ; with the peculiarities of the seaboard as it appeared to Drake when coasting it ; with the landfall of Point Reyes Head as he made it ; with the relatively smooth water so soon felt after he rounded the western extremity, and the clear indications of shelter under its eastern point ; and with the impossibility of his sailing direct to the North Farallones, or even to the South-east Farallon, from the Golden Gate of San Francisco with the prevailing summer winds."

Drake had been looking in vain for a northern homeward route and was returning along the California coast in search of an anchorage, where he might refit his damaged vessel. That he made a careful examination is proved by the fact that he occupied ten days in sailing from latitude 42° to latitude 38° , in the season of favorable winds.

It was not till he reached the lee of Point Reyes that he found a "faire and good bay, and a good winde to enter the same." From Point Reyes he could not see the entrance to the Bay of San Francisco, nor a sign of a harbor in that direction. If he had entered San Francisco Bay, he must have left a description of so unique an entrance and so magnificent an inland sea. He was impressed by the white cliffs that were every day before his eyes from his anchorage, and in the vicinity of the Golden Gate these cliffs do not exist. The Farallones, which he saw "a little without" his harbor, are below the horizon of the Golden Gate, and even after he left his anchorage he could not have reached them from San Francisco with the summer winds without making several tacks towards Point Reyes ; but from Drake's

Bay he could visit them without going out of his course.

The most convincing evidence is in the manuscript chart No. 85 of Dudley, with "B:di Nova Albion," and in the "Carta Particolare.*" In these a nearly identical line of soundings is laid down in the approaches and in the channel way of the bay in which Drake anchored.

They stand 8, 5, 4, 3 fathoms to the anchorage. Between the heads of the entrance to San Francisco Bay, the depths would have been 20 fathoms; in the Golden Gate 60 fathoms, if the currents would have let the lead reach the bottom; over the Presidio shoal 3 or 4 fathoms, then 10 or 12, under the south shore, and 20 to 15 fathoms dangerously close under the north shore.

The *Golden Hind* could hardly have sailed against the ebb current which Professor Davidson has measured, running out of the Golden Gate at a rate of $6\frac{7}{10}$ knots; and with a flood current the vessel would have been swept through with a threatening velocity.

Some persons will refuse to give up the belief that San Francisco Bay took its name from the bold English explorer who struck terror, as Dr. Hale puts it, to all the western coast of New Spain. The belief is none the less a delusion.

SOME UNEXPLORED REGIONS OF CANADA.—Dr. G. M. Dawson read before the Ottawa Field Naturalists' Club, in March last, a paper on some of the larger unexplored regions of Canada. Many of these areas lie to the north of the limit of profitable agricul-

*These are reproduced, with thirteen other charts, in the *Identification*.

ture, which Dr. Dawson defines by the isothermal line of 60° Fahrenheit, in the month of July.

This line passes through the southern part of Newfoundland, touches the island of Anticosti, runs to the north end of Mistassini Lake, and across Hudson Bay to a point a little to the north of York Factory. Thence it runs westward, past the north end of Reindeer Lake, and then northwestwardly, crossing Great Slave Lake and touching the southern extremity of Great Bear Lake. From this point its direction is westward to the Yukon River, a considerable distance to the north of the confluence of the Pelly and Lewes. Almost on the eastern line of Alaska it turns to the south.

Most of the regions available for wheat production are already known; but Dr. Dawson looks forward to the not distant day when there will be a demand for lands suited to the cultivation of the hardier crops, such as barley, oats, hemp, etc. He enumerates sixteen practically unknown districts:

1. An extent of 9,500 square miles, lying between Alaska, the Porcupine River and the Arctic.
2. The area between the Lewes and Yukon rivers, and the boundary of Alaska. This contains about 32,000 square miles.
3. A space of 27,000 square miles bounded by the Coast Ranges on the west and by the Lewes, Pelly and Stikine rivers.
4. The territory embracing about 100,000 square miles, between the Pelly and Mackenzie rivers. This includes nearly 600 miles in length of the main Rocky Mountain range.

5. The country between Great Bear Lake and the Arctic Ocean. This covers 50,000 square miles.

6. About 35,000 square miles, lying between the Great Bear Lake, the Great Slave Lake, and the Mackenzie River.

7. The territory bounded by the Stikine and Liard rivers on the north, and the Skeena and Peace rivers on the south; a tract of 81,000 square miles.

8. About 7,500 square miles lying between the Peace, Athabasca and Loon rivers.

9. About 35,000 square miles, to the south-east of Athabasca Lake.

10. The area of 7,500 square miles between Bathurst Inlet on the east and the Coppermine River on the west.

11. The territory of about 31,000 square miles, comprised between Back's River and the Arctic.

12. The vast region surrounded by Back's River, Great Slave Lake, Athabasca Lake, Hatchet and Reindeer lakes, Churchill River and the west coast of Hudson Bay, with an area of 178,000 square miles. Dr. Dawson remarks that the only authority for the lakes and rivers in the map of this region is Hearne, who wandered through parts of it in the years 1769-1772, but no reliance can be placed upon his accuracy; and the geographical results of Schwatka's journey across the extreme north-eastern part of this* territory are said to "possess little value;" possibly, for Schwatka had other results in view.

* Dr. Dawson makes a reference to "Schwatka's Search by H. W. Gilder." The author of *Schwatka's Search* is Mr. William H. Gilder, whose name is printed on the title-page of the book. The difference between William H. and H. W., though slight, is equivalent to the difference between George M. and M. G., and is, so far, worthy of attention.

13. The country between the Severn and Attawapishkat rivers and Hudson Bay; an extent of 22,000 square miles.

14. The area of 15,000 square miles between Trout Lake, Lac Seul and the Albany River.

15. About 35,000 square miles south and east of James Bay.

16. Almost the whole interior of the Labrador peninsula, estimated at 289,000 square miles.

These measurements, added together, make up nearly 1,000,000 square miles that wait for the explorer, to whom Dr. Dawson addresses, at the close of his paper, a few words of counsel.

POPOCATEPETL.—The Philadelphia scientific expedition to Mexico and Central America made an unfortunate beginning with the measurement of Popocatepetl, by Profs. Heilprin and Baker, who ascended the mountain in April last, and announced, on their return, that their calculations reduced its height from 17,884 feet to about 14,700 feet. The Mexican scientists received this information with mingled surprise and derision, and the Northern professors were made to see the error of their way. Not the instruments, but the men who handled them, were at fault; a thing pardonable in itself, in the absence of any previous knowledge of the point in question, but not to be excused, in full view of the many recorded measurements of Popocatepetl, beginning with Humboldt's in 1803. Humboldt says in the *Essai sur la Nouvelle Espagne**: "Between the capital of Mexico and the little cities of Cordoba and

* 2me Edition, Paris, 1825, Tome 1, p. 265.

Jalapa is a group of mountains that rival the loftiest summits of the New World.

"It is enough to name four of these, the height of which was unknown before my journey: Popocatepetl (5,400 metres, or 2,771 toises), Iztaccihuatl (4,786 metres, or 2,455 toises), Citlaltepétl, or the Peak of Orizaba (5,295 metres, or 2,717 toises), and Nauhcampatepetl, or the Cofre de Perote (4,089 metres, or 2,089 toises)."

He adds in a note that these measurements are geometrical, excepting that of the Cofre. This mountain he ascended, taking his instruments with him, on the 7th of February, 1804.

The figures given for Popocatepetl are equal, respectively, to 17,716.86 and 17,719.416 English feet.

Since 1803 the mountain has been measured by observers of various nations, and always with a result very like that obtained by Humboldt. Among these observers were the brothers Glennie, Baron Gros, Baron von Gerolt, August Sonntag, Dollfus, Pavie, Miguel Ponce de Leon, A. Garcia Cubas, Edward B. Tylor, and M. Jules Leclercq. The lowest elevation is that of 5,391 metres (17,687 feet), given by Miguel Ponce de Leon, and the highest that reported by the Glennies, 17,884 feet. M. Leclercq, who made the ascent in 1883, says: "My personal observations, combined with those of Mr. Roy, one of my companions, and those of Mr. Bárcena, the director of the Observatory at Mexico, who during our expedition registered the readings of the barometer at Mexico, gave the figures of 5,420 metres (17,782.48 feet) for the Pico Mayor, the culminating point of the mountain." Whether Popocatepetl is higher or lower than some other mountain is, in

itself, a matter of small consequence ; but it does no credit to professors of science to pass lightly over the work of their predecessors, and to assume infallibility for themselves.

RECENT CHARTS OF THE U. S. HYDROGRAPHIC OFFICE,
WASHINGTON, D. C.—

- No. 1120.—East coast of Central America ; Gulf of Honduras and approaches.
- No. 1165.—West Indies: Island of Saint Lucia, Port Castries.
- No. 1166.—West Indies : Anchorages Island of Saint Lucia ; Grand Cul de Sac Bay and Mari-got Harbor.
- No. 1168.—British Guiana: Mouths of the Demerara and Essequibo rivers.
- No. 1170.—Eastern Archipelago: West part of Java Sea and Southern Passages to China.
- No. 1172.—Peru : Huacho Bay and Chancay Bay.
- No. 1173.—Nova Scotia: Sheet Harbor and Adjacent Anchorages.
- No. 1174.—Chili : Ports Caldera and Calderilla.
- No. 1175.—West Coast of Newfoundland : Ports Saunders and Keppel and Hawke harbors.
- No. 1176.—South America : Coasts of Colombia and Ecuador, Panama to Cape San Francisco.
- No. 1177.—South America : Coasts of Ecuador and Peru, Cape San Francisco to Paita.
- No. 1178.—Peru : Coast from Paita to Pisco.
- No. 1179.—Dominion of Canada: Gulf of St. Lawrence, Miramichi Bay (New Brunswick).

- No. 1180.—Peru : Independencia Bay.
No. 1181.—Chili : Cobija Bay and Gatico Cove.
No. 1182.—West Coast of Newfoundland : Savage
Island Anchorage and Old Port au Choix.
No. 1183.—Peru : Port Islay and Port Mollendo.
No. 1184.—Peru : Port Santa.
No. 1185.—Peru : Port Samanco, or Guambacho.
No. 1186.—Nicaragua : Harbor of San Juan del Norte,
or Greytown.
No. 1187.—Argentine Republic : Bahia Blanca.
No. 1188.—Eastern Archipelago : Java, Batavia Roads.
No. 1189.—Supplement to H. O. Chart 68 (of Behr-
ing's Sea and Arctic Ocean).
No. 1190.—Peru : Casma Bay and Huarmey Bay.
No. 1191.—Brazil : Rio Grande do Sul.
No. 1192.—West Coast of Lower California : South
Bay (Cerros Island).
No. 1193.—West Coast of Lower California : San
Quentin Bay to Cerros Island.
No. 1194.—West Coast of Lower California : San
Benito Islands.
No. 1195.—Peru : Lomas Road and Ports of San Juan
and San Nicolas.
No. 1196.—South Coast of Cuba : El Portillo.
No. 1197.—Arctic Ocean : Dominion of Canada, Sketch
of Herschel Island.
No. 1198.—Guano Islands in the Pacific : Baker Island
and Howland Island.
No. 1199.—Peru : Ilo Road.
No. 1201.—Peru : Port Bermejo.
No. 1202.—Chili : Port Papudo and Horcon and Quin-
tero Bays.

No. 1204.—West Coast of Lower California : Port San Bartolomé.

No. 1206.—China Sea : Singapore New Harbor.

No. 1209.—Chili : Approaches to Coronel and Lota (Arauco Bay).

No. 1210.—West Indies, Island of Santo Domingo : Manzanillo Bay.

No. 1211.—Guano Islands in the Pacific : Canton Island (Swallow, or Mary Island) ; Canton Island Anchorage ; Phoenix Island.

No. 1212.—Chili : Lavata Bay and Pan de Azúcar Anchorage.

No. 1213.—Peru : Salaverry Road.

No. 1214.—Peru : Atico Road.

Pilot Charts of the North Atlantic ; January, February, March, April, May, June.

A SIMOOM AT MASSOWAH.—M. Antoine d'Abbadie relates, in the *Bollettino* of the Italian Geographical Society for March, his experience of the desert wind on the 22d of September, 1841.

He was at Addi-Hadib, on the mainland, near Masowah, and proposed to study the simoom (Samuwn) which, according to a theory no longer accepted, was then about to blow. He had taken his seat in front of a stone on which were his thermometers, so near that he could reach them with his hand. The wind came, and with its first breath he found himself so weak that he could not lay hold of the instruments. He took them when the wind ceased. The humidity registered was $\frac{77}{100}$ and there was a difference of only 1.7 degrees between the thermometer with a black bulb and the one with the

plain bulb, though both were exposed to the sun. It was about two o'clock in the afternoon. The sand on the surface marked 60 degrees (140° Fahr.) and the velocity of the wind was not greater than that of an ordinary breeze. It lasted five minutes and fell as abruptly as it rose; and it brought with it neither dust nor sand.

A native told M. d'Abbadie that this wind was called *Karuw*, and that if it blew for a quarter of an hour, neither man nor beast could live through it. At such times the shepherd, posted as a sentinel on the top of a hill, knows that the *Karuw* has killed the people when he sees that no one of them rises from the ground, on which they throw themselves to breathe.

M. d'Abbadie's reminiscence is meant to correct a statement made in a paper by Robecchi-Bricchetti, in the *Bulletin* of the Khedivial Geographical Society, Third Series, No. 2, in the following words:

"In this *wady* the wind is laden with a suffocating dust, which darkens the air. A shower of gravel and sand pelts the face and hinders the breathing, so that the head has to be covered, all but the eyes, which grow red and weep. This is all the harm that comes of the simoom, the much abused wind of the desert, made so terrible by the imagination of travellers."

In this description M. d'Abbadie recognizes the *harif*, a wind that brings clouds of choking dust, on which all living creatures turn their backs for defence;* and he affirms that there is not even a touch

* This is almost in the words of Dante:

Dinanzi polvoroso va superbo,
E fa fuggir le fiere ed i pastori.

of exaggeration in the received accounts of the simoom.

THE PASSING OF VOLAPÜK.—An advertisement in the London *Athenæum*, of April 19, invites those who are interested to join a proposed International Society for the adoption of the Latin language as a substitute for Volapük. The invitation is a curiosity,* worthy of preservation; and the obvious *commentatio* is that Volapük has nearly run its career.

There will be few to weep for a phenomenon, that was never a thing of beauty.

THE PORTUGUESE IN SOUTH AFRICA.—M. Gabriel Marcel devotes an article in the *Revue de Géographie*, for March, to an examination of the record concerning the Portuguese explorations in Southern Africa from the time of Vasco da Gama; not to reproduce the record, for that would require a volume, but to bring out two or three salient, though strangely neglected, points in the history of geographical discovery. M. Marcel's sympathies are with Portugal in her conflict with England. "Here," he says, "at the end of the XIX century is another illustration of the old adage that Might makes Right. And the country that employed iron-clad ships and cannon in the place of sound arguments was the very same England, that has always claimed to be the apostle of justice and the champion of freedom. What a bitter mockery! Assuredly, when she

* LINGUA LATINA contra VOLAPÜK.—Propositum est Societatem Internationalem instituere, et linguam Latinam accurate ad tempus adoptare. Cui res est curæ, nomen, cum commentatione qualibet deponat apud SOCIETATIS SCRIBAM, Sell's Advertising Offices, London.

had matter of dispute with Germany, the doughty Albion used no such arrogance of language, nor was she in such haste to show the steel of her sword. She bent herself with humility before that antagonist."

M. Marcel takes a good part of his material from Mr. T. E. Bowdich's book : "An Account of the Discoveries of the Portuguese in the interior of Angola and Mozambique," published in London in 1824.

The expeditions and the effective possession of the country by posts and trading stations are described by Bowdich on the authority of official documents, and M. Marcel has found in the National Library in Paris a map, that establishes the truth of these documents and the antiquity of the Portuguese occupation.

This map is a MS., which forms part of a collection that once belonged to the Abbé Michel-Antoine Baudrand, a geographer who died in 1700. It is without date ; but M. Marcel, from a study of the handwriting, the orthography, and the texture of the paper, assigns it to the last twenty years of the XVII century.

His decision in such matters is not to be lightly questioned ; and he remarks that no other map in the volume bears a date subsequent to 1700.

At Baudrand's death, his collection became the property of the abbey of Saint-Germain des Prés ; it passed, at the end of the Revolution, into the library of the Tribunat, of which it bears the stamp, and finally came to the National Library, where it is numbered 388 in the geographical section.

This map of the "Empire of Manamotapa" measures 20 in. x 13 in.

It shows with comparative accuracy the course of the

Zambezi ; the falls and rapids of Kebrabasa and the cataract of Morumbua are marked by inscriptions, which state that the river, navigable for two hundred leagues below, here suddenly ceases to be so, and deepens again farther on.

There is a fort of São-Estavão, which M. Marcel has not identified, another named Chicova, and market towns like Mazapa and Mauzovo, called *feiras*. Some of the inscriptions denote the presence of gold : *Terras de moca Ouro, minas de Ouro* ; and in one place, on the left bank of the Zambezi, the gold is said to be of fine quality. The course of the Shiré is traced in a direction approximatively correct, and the country is described as populous and very fertile ; but there is no indication of the lakes Nyassa and Tanganyika.

In the maps of Mercator, Bertius, Hondius, Meursius, Sanson and Duval, the Cuama, or Zambezi, is drawn in a purely fanciful manner ; but on the famous Coronelli globe (1683) it is represented as in the MS. map. It is evident that the Venetian geographer had access to Portuguese documents now lost. On this huge globe (published in a reduced form by Deuwez in 1688) the Shiré is without a name, but M. Marcel quotes the following inscriptions : *Citta e Fortalezza de Tete de Portog., Empango, fortezza de S. Estevao, anavegacao lago, fortezza de Chicova* (on the Zambezi, in the place now occupied by Zumbo), *Regno de Chicova*, and *Minere d'argento ch' il re di Monom. promise al Re di Spagna nel 1604.**

*Most of these inscriptions explain themselves. *Empango* is a native name ; and it is only necessary to recall the fact that Portugal formed a part of the Spanish monarchy in the period 1580-1640 to understand why the King of Monomo-

In a map of 1689 Coronelli marks on the left bank of the Zambezi, near the Shiré, a fortress named *S. Martial*. This is reproduced by de Fer, in 1698, and he also gives the name of Figueiral to a site in the interior of Mashonaland. G. Delisle, in his "Map of the Congo and the country of the Caffres" (1708), and D'Anville, in his "Western Ethiopia" (1732), give the Zambezi River as it is represented in the MS. map, in Coronelli and in de Fer; and the inscriptions in these latest maps attest the presence of the Portuguese in the far interior. M. Marcel quotes the testimony of Bowdich to the same effect: "Zumbo," he says, "where the Portuguese have a factory, is on the Cuama (Zambezi), thirty days' march from Tete. The first fifteen days the traveller must go by land as far as Chicova, so as to avoid a cataract called Sacumbe; but beyond that point the navigation is free. Zumbo, though it is without fortification and is surrounded by forests, is an important trading station, to which is brought the gold from the mines of Abutua, Pemba and Murusura, besides ivory from the Orange River, rhinoceros' horns, and other merchandise."

The Maravi* (Nyassa) Lake is described by Bowdich, not inaccurately, though he gives it a longitudinal direction to the N.N.E., and identifies it with the Tan-

tapa, in 1604, promised silver mines to the King of Spain. One of the legends—*anavegacao lago*—looks like an attempt at a Portuguese sentence—a *navegação (do, or do) lago*—but a reference to Coronelli's map of 1689 shows that the correct reading is *Ananegacano Lago*, the native name of a lake on the upper Zambezi, where modern maps show no lake at all.

Figueiral, the name of the site in Mashonaland, given by M. Marcel on the authority of de Fer, appears to be the *Figueral de Mesures* of Coronelli's map.

* M. Marcel inadvertently makes this the Tanganyika.

ganyika; "for," he says, "it is known that it reaches as far as the latitude of Mombasa, and even beyond that."

M. Marcel is surprised that Pereira's expedition of 1796, recounted at considerable length in Bowdich's book, has been so completely overlooked by later writers. Pereira set out from Maringa, three days' march to the north of Tete. He crossed a swift stream, the Arwangoa (Loangwa), which the natives said communicated with the Zambezi, near Zumbo. Here he left some slaves, and entered the territory of the Movizas, "and at the end of eleven days, during which he travelled at the rate of five or six hours in the twenty-four, he came to another river, called by the Movizas Zambese, but which he was convinced could not be the stream of the same name that passes Tete, because this new Zambese, as he terms it, flows in a different direction, and falls into another river of which notice will be taken hereafter." *Bowdich*, pp. 87, 88.

This *Zambese* is the Chambezi, that flows into Lake Bangweolo, and is now known to be one of the sources of the Congo River. "Livingstone," says M. Marcel, "was in error when he believed that he had discovered the Chambezi; he merely followed in the footsteps of the true discoverer, Pereira."

Crossing the Chambezi, Pereira and his people entered the territory of Cazembe. For nineteen days they marched through a desert region, and spent nearly a whole day in struggling through a shallow lake, out of which flowed a broad river named Murusura. On the bank of this river stood the capital of Cazembe. Bowdich gives many details of Pereira's reception by the King of Cazembe, who parted with his visitor only

on the assurance that he would return before long. This he did in 1798, in company with Lacerda, the Governor of Tete.

Lacerda intended to complete the explorations begun two years before, but he fell sick, and died on the bank of the Chongu.*

The expedition of 1831, under Major Monteiro and Captain Gamitto, is noticed by Livingstone in these words: "Monteiro went nowhere and did nothing, but some of his people got as far as the Luapula, which is about six miles away. In his report the major complains of having been robbed by Cazembe.

"I asked the headman why Monteiro's property had been taken from him, and was told that he knew nothing of the matter, because he was then in another village. Ben-Séli, who had been on the spot, spoke up and said that Monteiro's assertion was false; that he had suffered no violence, but that there was a scarcity of food, and the major's merchandise was bartered for provisions, instead of ivory and slaves, and that he had then invented the story of the robbery to put off his creditors."

M. Marcel observes that an escort, a guard of honor, was furnished to Monteiro by Cazembe. Kapika, an old man, still living, was one of the commanders, if not the chief of this escort, and he relates that he went with Monteiro to Tete, and Sena, and Quilimane. It is not to be supposed that this guard would have been offered or accepted if the major had really been plundered by Cazembe.

* Arrowsmith marks the latitude of this place $8^{\circ} 43' S.$, but M. Marcel makes it $9^{\circ} 32'$.

M. Marcel, in closing his paper, invites the attention of his readers to the unvarying colonial policy of England: "In the region of the Nyassa, the Tanganyika, and the Victoria, as in every other part of the world," he says, "the missionaries open the way to the traders; and when the traders have taken firm root in the country, a royal charter is granted, and then the country is annexed."

So far his readers will go with him; but when he affirms that this sinister alliance of religion and commerce is only to be seen in England, he surely forgets the history of other countries. Is there any colonizing nation that does not seek to profit, in a material way, by the labors of its missionaries? Relatively to the extent of her interests, England does no more of this sanctimonious trading than any other Power; and M. Marcel seems to beat the air when he denounces her.

HOW TO TRAVEL IN THE SAHARA.—E. M. writes to the *Bulletin de la Société de Géographie Commerciale de Paris*, Tome XII., No. 2, a report of a conversation had with some Tuareg friends, in Algiers, on the subject of M. Douls, and his tragic death on the way to Timbuktu.

These Tuaregs were temporarily confined in one of the forts, and the interview took place on the terrace, which overlooked the city and the blue sea beyond.

E. M. remarked the beauty of their naked feet, with high-arched insteps. "When Kenan sets down his foot," he says, "I can pass my cane under it, between the ball of the foot and the heel."

The Tuaregs asked if there was anything new. Their

visitor translated from the *Journal des Débats* the account of the death of M. Douls; and his hearers expressed their surprise that an *infidel* had been able to obtain letters of recommendation from the emperor of Morocco, in their eyes the true, and possibly the only, sovereign of the Mussulman world.

When the reader came to the hiring of the guides by M. Douls, the Tuaregs recognized the names *Idhenan*, *Ibodhtanaten*, as those of tribes subject to the Aulimiden of the Adhar. No remark was made on the description of the way in which the guides were engaged; but the suggestion that the display of money by the traveller had excited his men's cupidity, and had been the cause of his death, met with immediate assent.

E. M. adds that greed is the master passion of the Tuaregs, who will strip their best friend, and clothe him afterwards.

The traveller's only security is in the sentiment of honor, which exists among the nobles.

M. Douls was strangled by his guides at the well of Ilighen, while he slept. The Tuaregs listened to the recital of the deed without showing pity or surprise; but they were disposed to suspect the men of the caravan, with whom Douls had journeyed, of complicity with his guides.

There was silence for a time after the reading. Kenan ag Tissi spoke at last, in a quiet tone: "That traveller was a man of no great standing. He ought to have had more self-respect than to associate with such creatures as the serfs of the Aulimiden. You said that he went into the Tuat with letters from Muley-Abd-er-Rahman. I supposed, therefore, that he was a

man of distinction ; and the first thing he does is to engage two Ibodhtanaten, people that he does not know, then to go off alone with them, and to pay them in advance. Men that come recommended by Muley-Abd-er-Rahman do not act with such a want of discretion.

"I heard you read also that he had been well received by the marabouts of the Tuat and particularly by the marabout of Aulef. It would therefore have been easy for him to find safe guides. He had only to ask for them.

"It is true that the marabout might have made him wait ; but travellers must have patience. I think, moreover, that he ought not to have gone forward until his safety had been in this way guaranteed by the marabout."

"But," answered E. M., "M. Douls had a great deal of experience in these matters ; he had lived a long time in the Sahara with the Reghibat and the Aulad Delim." "Those are people whom I know by reputation ;" said Kenan ; "they are marauding Arabs of the West, who sometimes pay us tribute. I know nothing of their ways, but among ourselves a man is respected, or not, according to his company. A Frenchman, travelling with Sidi (Ag Kerrazi, Kenan's uncle) would be safer in the Ahenet than in Paris ; but we certainly should not be answerable for a man who risked his life in our desert, as M. Douls did, with two worthless fellows." "Worthless fellows," replied E. M., "are common enough in the Sahara, and those two are of the worst ; for the man they assassinated was, so far as they knew, a real Mohammedan pilgrim." At these words the Tuaregs

laughed, and Kenan made answer: "It is impossible for a European Christian to disguise himself completely like an Arab Mussulman. There will be something in his walk, or his gestures, or his language, that will betray him. Remember also that the Tuat is full of intelligent people, who know you Frenchmen perfectly well and have even lived among you. They take no offence at finding you there, because their belief is that you have no religion, and they are glad to hear you repeat in Arabic that there is no God but God and that Mohammed is His prophet. At the same time they ask themselves what you are doing there, and they distrust you, at the very moment when you are in need of their confidence. When another Frenchman proposes to cross the Sahara, and to dwell among the Tuaregs, tell him first of all never to lie, for lying is the mark by which we recognize serfs and slaves.

"Let him travel, if he has succeeded in gaining the friendship of an Amr'ar, with his face uncovered, and dressed like a Frenchman, just as we, when we go to Paris, wear our black robes and our veils. If he takes part in a council, let him appear in full dress and declare that he does it out of respect to the assembly. When we went with you to visit your friends, we wore our red caps with blue silk tassels, our red girdles and broad belts. Then people know that they are dealing with a real Frenchman. If they insult him, or attack him on his way, that will be a serious matter, and you will be able to call them to account for it; but I repeat that there will be nothing to fear if the traveller has the friendship of an Amr'ar. If, on the contrary, he dresses like an Arab, in an old burnoose, and rides on

a baggage camel like a low slave-dealer, nobody will care for him, and you know very well that the Arabs kill each other every day in the Sahara. That concerns us no more than it does you. If a man chooses to mingle with the low, he must take the consequences. Not even the letters of Muley-Abd-er-Rahman will give him dignity, nor will any one of the Tuareg nobles, who keep order in the desert, take the trouble to watch over him, or to avenge him."

E. M. remarks, in closing, that Richardson, Barth, and Duveyrier, the only Europeans who dwelt among the Tuaregs in the Sahara and returned in safety, followed the method prescribed by Kenan ag Tissi.

TITLES OF PAPERS IN GEOGRAPHICAL JOURNALS.

BRUSSELS.—*Le Mouvement Géographique.*

Stanley Africanus—The Congo Celebration at the Bourse—The Congo Railway—at Kassongo—Colonial Policy (Notice of M. Jules Ferry's book *Le Tonkin et la Mère-Patrie*)—The Brussels Conference—A Belgian Scientific Expedition to the Congo—The Lualaba—The Upper Congo Flotilla—A Congo Chief and the Palavers—Capt. Delporte's Exploration.

EDINBURGH.—*The Scottish Geographical Magazine.*

Border-Lands between Geology and Geography—The Vertical Relief of the Globe—Southern California: Past and Present—Scandinavia: The Vikings and the Geography of their Times—Recent Explorations in Peru and Bolivia—Sir W. Macgregor's Discoveries in New Guinea—Geographical Notes on the Country

between Lakes Nyassa, Rukwa and Tanganika—The Mapping of the World—Map Projections.

GOTHA.—*Petermanns Mittheilungen.*

Report on the Bremen Geographical Society's Expedition to Eastern Spitzbergen in 1889—On Mean Differences of Boundary—Dr. Peters' Expedition—New Surveys in the Higher Caucasus by the Russian General Staff—Equivalent Map-Projections—Bokhara on the Threshold of the New Era—Travels in the East India Archipelago—Letters from Emin Pasha—The New Island in the South Sea (Falcon Island)—The Way to the North Pole Nordenskiöld's Facsimile Atlas—The Caravan Route from Zeilah to Ankober and the Cartography of the Somali, Afar (Danakil) and Galla Countries—The Projected Harbors on the western Coast of Schleswig—Inquiries concerning 24 Tongues in the Region of the New-Guinea Company's Protectorate—Emin Pasha's Meteorological Diaries—Rainfall at the Capital of Madagascar—Completion of the Special Map of the Austro-Hungarian Monarchy—New Traces of Leichhardt—Fluctuations of the Earth's Axis.

Ergänzungsheft Nr. 97.

Zones of Cultivation in Northern Abyssinia.

LONDON.—*Royal Geographical Society, Proceedings.*

Journey to the summit of the Owen Stanley Range, New Guinea—Mr. J. T. Last's Map of Eastern Africa, between the Rovuma and the Zam-

bezi—Mr. H. H. Johnston's Journey North of Lake Nyassa and Visit to Lake Leopold—Notes of a Recent Visit to Peru and Bolivia—Search and Travel in the Caucasus (by Douglas W. Freshfield)—Geographical Results of the Emin Pasha Relief Expedition (H. M. Stanley)—Ascent to the Summit of Kilimanjaro—Notes of a Journey through Mashonaland in 1889.

PARIS.—*Société de Géographie, Compte Rendu.*

Notice of the decease, at Algiers, on the 22d February, 1890, of M. Edouard Charton, founder of the publication, *Le Tour du Monde*—The Dunes of the Sahara (M. Rolland)—Recent Events in Uganda—Explorations in Madagascar (MM. Maistre et Catat)—Railway across the Sahara (M. Rolland)—M. Deflers in Arabia—Bouvalot in Central Asia—Dauvergne in Kashmir—Fontaine in Laos—Letter from H. Coudreau in Guiana—M. Edouard Blanc on the Railway across the Sahara—L'Abbé Desgodins and his Recollections of Thirty-four Years in Tibet—The Congress of French Geographical Societies at Montpellier (May, 1890)—Note on Formosa, by M. Romanet du Caillaud—Letter written from Cacheo (Portuguese Guinea), by M. E. Bonvalet—The City of *America* (Nicaragua), founded January 1, 1890—Election of M. de Quatrefages to the Presidency of the Society—Mr. Karl Schroeder's Plan of the Earth's Surface—The Remains of

Camille Douls—Capt. Courbis on the Dunes of the Sahara (in reply to M. Rolland)—Capt. Alfred Le Chatelier on the Dangers of an Expedition to In-Salah (in reply to M. Rolland)—Ascent of Clarence Peak, in Fernando Po, by M. Etienne de Rogozinski—Letter of M. H. Pitter, Director of the Observatory, San José, Costa Rica, on the Earthquake of January 10, 1890—Recent Cartographical Publications of the Russian General Staff—The Tomb of Dumont d'Urville—Nansen's North Pole Expedition—Capt. Grombtchevsky in Central Asia—M. Dauvergne in Central Asia—The Trans-Sahara Railway (remarks by M. Fock)—The Earthquake in Costa Rica—M. A. de Lapparent on a New Cause of the Mobility of the Earth's Crust—The Scientific Study of Lakes (M. Thoulet)—Archæological Expedition of M. N. Yadrinsef in Northern Mongolia (under the auspices of the Irkutsk Branch of the Imperial Russian Geographical Society).

Bulletin.

Explorations in Russian Lapland, or the Kola Peninsula (1884-1885) by Charles Rabot—From the Pacific to Pará (Marcel Monnier).

ROME.—*Società Geografica Italiana, Bollettino.*

Itinerary in Ethiopia—Ancient and Modern Abyssinia—The Cascade of the Maletsuniane (affluent of the Orange River, in Basutoland)—A Simoom at Massowah—The Portuguese at Massowah in the XVI. and XVII. centuries—

A New Work on the History of Mediæval Geography (Dr. Kretschmer's *Die Physische Erdkunde im christlichen Mittelalter*—Sir Henry Yule—Mercator and his Maps—The Somali, Galla and Harari spoken Languages—The Letter written by Emanuel of Portugal to Ferdinand and Isabella concerning the voyage of Cabral, on his Return from Brazil to the Coast of Africa (1500-1501)—Minés in the Republic of Colombia—Drawings made by Bushmen.

VIENNA.—*Kais. Königl. Geographischen Gesellschaft, Mittheilungen der.*

Travels of a Naturalist in the Western Canary Islands—Contributions to the knowledge of the Mandayas (in Mindanao), by Blumentritt—

WASHINGTON.—*National Geographic Magazine.*

On the Telegraphic Determinations of Longitude by the Bureau of Navigation, by Lieut. J. A. Norris, U. S. N.—Reports of Vice-Presidents—The Rivers of Northern New Jersey, with notes on the classification of rivers in general : William Morris Davis—A Critical Review of Bering's First Expedition, 1725-30, together with a translation of his original Report upon it : Dr. Wm. H. Dall—Supplementary Note on the alleged observation of a Lunar Eclipse by Bering in 1728-29 : Marcus Baker.

WASHINGTON LETTER.

WASHINGTON, JUNE 20, 1890.

GEOGRAPHY OF THE SEA.—There is no branch of the Government service with a better record for disseminating practical and valuable information, than the United States Hydrographic office. A large share in the progressive state of the science of the geography of the sea, must be credited to its systematic collection of marine observations. In addition to the numerous charts, sailing directions, lists of lights, etc., which are permanent and standard publications, but continually revised according to the latest data supplied by thousands of correspondents in every part of the world, it issues monthly the well-known Pilot-chart of the North Atlantic (also a weekly supplement), and weekly, the *Hydrographic Bulletin* and a pamphlet entitled *Notices to Mariners*. The two former are issued from the division of Marine Meteorology, in charge of Everett Hayden, U. S. N., retired; the newest branch of the Office, but one that has already proved its usefulness.

The *Bulletins* contain descriptions of derelicts, wreckages, marine accidents, etc., and where located, and ice reports. The issue for June 6th had ninety-eight separate items. The *Notices to Mariners* describe newly discovered shoals, banks, dangerous rocks, changes in channels, lights, buoys, fog signals, etc. The Pilot chart is one of the most popular publications of the Government. Its high standard of efficiency, useful-

ness and reliability, is constantly and favorably commented upon both at home and abroad. Its value to commerce and to trans-atlantic steamers cannot be overestimated. The publication originated with this office, and it has no competitor. It delineates graphically the currents of the ocean, the changes that take place in them during each month, the quickest and safest routes where the best conditions for favorable passages are to be found, the probable limits of fogs, the locations of wrecks and changes in such locations, the course of derelict vessels, meteorological phenomena, on which is based a forecast of the weather for the month immediately following the date of issue, and the location and course of bergs and ice fields.

The chart for June illustrated the position and dates of icebergs reported during May. The region is south-east of Newfoundland and south and east of the Grand Banks. The routes plotted for the trans-atlantic steamers are south of this region. According to Lieut. Richardson Clover, of the Hydrographic Office, these enormous masses of ice drift down past the east coast of Newfoundland and far down along the eastern edge of the Grand Banks; but upon approaching the 41st parallel they reach the warm easterly-moving Gulf Stream current, and their southerly progress is arrested. Many of them hang about the tail of the Grand Banks, about $24^{\circ} 30'$ north, longitude 50° west, while others drift slowly off towards east-north-east, gradually melting and breaking up. He says that the idea that there is ice to an indefinite distance to the southward, and that it cannot be escaped is a vital mistake, and any one who has any idea of the completeness of the data received

from masters of vessels for use in preparing the Pilot chart, must realize how true is the clearly indicated evidence, that there is little or no ice south of the 42d parallel, and certainly none whatever south of 40° 30' north. Moreover, the further north the more numerous, solid and massive are the icebergs; and the further south the fewer, smaller and less compact.

Ensign Hugh Rodman, U. S. N., on duty in the Hydrographic Office, who has made a study of icebergs and field ice in the North Atlantic, says: * "The movements of the ice depend in a great measure upon the various currents that traverse the ocean, as well as upon a great variety of other forces, and little can be said with any degree of definiteness as to the probable movements of ice beforehand. Hundreds of vessels have been lost from ignorance of the local path of the ice, and many are damaged on the same account. There is great difference in the rates at which bergs travel. One may reach the southern waters the same year in which it is produced, while another may be several years going the same distance. The ice fields are a great obstacle to their progress, smashing them up, and causing their disintegration. They are very brittle, and sometimes a sharp blow of an axe or the concussion of the report of a cannon will demolish one. Quite often they have long outlying spurs projecting under the surface of the water, but as a rule they are nicely balanced and are quite apt to tumble over if disturbed. They are detected in fogs by their apparent blackness, but more often by the echo which they throw off from any such sound as a fog horn or a whistle."

* Address before the National Geographic Society.

It has been the desire of the Hydrographic Office to commence the publication of a Pilot chart of the South Atlantic and west coast of South America, and as a basis of the work, it has in preparation in connection with the reports of the United States Eclipse Expedition to the west coast of Africa, a set of daily weather maps of both oceans, from October, 1889 to May, 1890, the entire period of the cruise of the *Pensacola*. "The scheme determined upon,* consists in the preparation of a weather map for each day at noon, Greenwich mean time, from October 1, 1889, to May 31, 1890, for the entire area between lat. 70° N. and 60° S., long. 20° E. and 100° W. In addition to the Greenwich noon observations that are kept regularly for this office by nearly two thousand voluntary observers, it is earnestly desired that other navigators of these waters within the limits of time and place mentioned forward such data from their log-books as may be useful in this connection, selecting those observations that come nearest to noon, G. M. T., and stating as many details as possible regarding, wind, weather, state of the sea, and velocity and set of currents. In the case of a storm, hourly observations about the time of the lowest barometer will be very useful. Data from land stations are also very important. To make this great undertaking a success, there must be cordial co-operation amongst the nations interested in the meteorology of this vast area, and amongst navigators of every nationality. It is intended to publish the results in such form, and with such wide distribution as well to repay every one who contributes to its success.

* Note on Atlantic Pilot chart for June.

METEOROLOGY, ETC.—About twenty five members were present at the annual meeting of the American Meteorological Society in this city. Dr. B. A. Gould presided, and Mr. O. H. Tittman of the Coast Survey was Secretary. The papers read were: Instruments of valuation, by S. Dana Horton; Gold and Silver as measures of value, considered from a metallurgical standpoint, by Prof. T. Egleston; Remarks on the nomenclature of electrical units, by Prof. T. C. Mendenhall; and a supplementary paper on the same subject by Prof. Crocker of the National Association of Electricians.

The American Meteorological Society at a recent meeting held also in this city, adopted resolutions favoring the recognition of the eminent services of American electricians by perpetuating their names in the nomenclature of electrical units. It will be proposed at the Electrical Conference to be held in America in 1892 that the name of Joseph Henry—or some modification of it—shall be given to the unit of self-induction, “he having been the first to investigate that phenomenon and his investigations having been more complete than those of other electricians before or since.”

The friends of the late Joseph Henry are urging upon Congress a gift \$25,000 to his family in recognition of gratuitous services for many years as a valued member of the Light-House Board. Professor Henry's investigations, and experiments, as it is well understood, have saved hundreds of thousands of dollars to the Government. One of the most modest of men, he freely gave the results of his investigations to science and to the world. Letters patent would have secured him wealth in abundance and liberal competence to his family, but instead, he left

only the heritage of his great name and a moderate sum presented to him by his admirers a few years before his death. If the proposed gift were ten times as great, it would be but a small percentage of the gain to the American people from the free use of his scientific discoveries.

ECLIPSE EXPEDITION.—An Act was passed by Congress on the 2d of March, 1889, authorizing the Secretary of the Navy "to use \$5,000 to defray the expense of sending a scientific expedition to the west coast of Africa to observe the total eclipse of the sun which will occur on the 22d of December, 1889." March 26th the Chief of the Bureau of Navigation appointed a Board consisting of Capt. R. L. Phythian, U. S. Navy, chairman, and Professors Simon Newcomb and Asaph Hall, U. S. N., to devise a plan and make recommendations.

In accordance with the report of this Board made May 28th, the Department organized the expedition in two parties,* and tendered the appointment of chief of one party to Mr. J. A. Rogers of Washington, and of the other to Professor David P. Todd of Amherst College, Mass. Mr. Rogers resigning his appointment, the Secretary of the Navy appointed Professor Todd to the charge of the expedition. Various new instruments were immediately constructed and other apparatus was obtained from the U. S. Naval Observatory, from the observatories and laboratories at Clark, Harvard, Johns Hopkins and Yale Universities, from the Massachusetts Institute of Technology, from the U. S. Coast and Geodetic Survey, the Army Signal Service, the National Museum, from the observatories at Allegheny, and Am-

* See Am. Geog. Society's BULLETIN No. 3, 1889—The Eclipse, 1889.

herst, Columbia and Princeton Colleges, from the U. S. Nautical Almanac Office and the U. S. Fish Commission; besides a large complement of important instruments by private loan. The apparatus embraced all the instruments necessary for the photographic registration of the partial phases of the eclipse, and for the complete photographic, spectroscopic, photometric and polariscopic study of the sun's corona.

The Secretary of the Navy detailed the *Pensacola* to convey the members of the expedition to the west coast of Africa and return them to the United States. The vessel sailed from New York on the 16th of October, 1889, and returned on the 23d of May, 1890.

The composition of the expedition was as follows:

David P. Todd, Director,	<i>Astronomy.</i>
Cleveland Abbe,	<i>Meteorology.</i>
Frank H. Bigelow,	<i>Astronomy.</i>
Arthur H. Brown,	<i>Natural History.</i>
W. Harvey Brown,	<i>Natural History.</i>
John E. Carbutt,	<i>Photography and Chemistry.</i>
Héli Chatelain,	<i>Languages.</i>
Herman S. Davis,	<i>Astronomy.</i>
L. Harold Jacoby,	<i>Astronomy and Geodesy.</i>
Eben J. Loomis,	<i>Botany and Ornithology.</i>
C. A. Orr,	<i>Anthropology.</i>
Erasmus D. Preston,	<i>Terrestrial Physics.</i>
Edgar J. Wright,	<i>Photography.</i>
Daniel H. Barlett.	
George F. Flint.	
M. O'Conner.	
G. E. Van Guysling.	

Professor Alexander Agassiz of Cambridge, and Dr. William J. Holland of Pittsburgh, were appointed by the Secretary of the Navy members of the expedition, but were obliged to decline the appointments.

The itinerary included the Azores, Cape Verdes, Sierra Leone, Gold Coast, São Paulo de Loanda, Cape Sedo, Cape Town, St. Helena, Ascension, and Barbadoes. There was not a stormy day from the beginning to the end of the voyage.

The preparations for the total phase of the eclipse were very elaborate, "nothing short of complete automatic operations of all the photographic instruments." But totality was completely clouded under, and, as Professor Todd says,* "instead of a fine accumulation of photographic data, I have only the gratification of having shown it to be practicable in the future for one eclipse observer to operate an indefinite amount of photograph apparatus quite as readily as, and with greater certainty than, he would have attended to only two or three cameras by hand heretofore." It was cloudy also at Cabiri, Cunga, and Dondo where auxiliary observers had been stationed, as well as at Cazengo, Oeiras, Muxima, Kakulu and Bom-Jesus. Observers on the *Pensacola*, 15 miles out at sea in the path of the central eclipse obtained no better results. No photographs of the corona were secured.

Numerous observations were taken from Cape Sedo where the weather was clear for a portion of the time. The direct view with the photo-heliograph of 44 feet focus proved an entire success. Each of the 22 inch circumpolar plates has ten images of the sun in eclipse, seventy of them being taken before the middle, and ten after totality.

While the main eclipse party was established at Cape Sedo, naturalists and anthropologists were in the in-

* *Nature*, May 1, 1890.

terior. Physical measurements were taken among several tribes; collections of folk-lore, fetishes and mind-products were made, and general information gathered. Both naturalist and anthropologist found the outlook so promising at the Cape that they applied for discharge from the expedition in order to continue the work on the peninsula. The naturalists of the U. S. National Museum were active in making collections at all ports. M. Chatelain remained at Angola to gather linguistic and ethnological material for various works he has on hand.

The researches of Professor Abbe, the meteorologist of the expedition, prosecuted with improved means and under rare conditions on sea and on land, are expected to produce most important results, and perhaps revolutionize some branches of that science.

In gravity research Mr. Preston, of the Coast Survey, swung the Pierce pendulums at Loanda, at Cape Town, at St. Helena, at Ascension, at Barbadoes and at Bermuda.

The early literature of this expedition bids fair to excite the cupidity of bibliomaniacs at least, inasmuch as the several works were printed in very limited quantities, and, with one or two exceptions, on board the *Pensacola*. But in order to preserve the record, and show collectors and others what they cannot have, a list is subjoined. The printers on the *Pensacola* were not idle.

Bulletin No. 1.—General. October 17, 1889.

" No. 2.—Meteorological, by Cleveland Abbe. October 18, 1889.

" No. 3.—Fish of the Congo Basin, by Theo. Gill. October 21, 1889.

" No. 4.—The Total Eclipse, by D. P. Todd. Nov. 1, 1889.

- Bulletin No. 5.—Bibliography of Ki-Mbundu, by Héli Chatelain. November 5, 1889.
- " No. 6.—Water spouts, by Cleveland Abbe. November 7, 1889.
- " No. 7.—Provisional list of animals of Angola and vicinity, by F. W. True. Nov. 15, 1889.
- " No. 8.—Eclipse photography, by Frank H. Bigelow. Nov. 20, 1889.
- " No. 9.—Instruções para observação do eclipse total do sol, por D. P. Todd. Traduzidas por H. Chatelain. December 10, 1889.
- " No. 10.—Suggestions for amateur observers, by Cleveland Abbe. Dec. 10, 1889.
- " No. 11.—Terrestrial physics, by E. D. Preston. Dec. 24, 1889.
- " No. 12.—The total eclipse, by D. P. Todd. Dec. 31, 1889.
- " No. 13.—Localities of scientific interest in St. Helena, by Cleveland Abbe. March 19, 1890.
- " No. 14.—Bibliography of Angola and other parts of Africa, by E. J. Loomis. April 15, 1890.
- " No. 15.—The law of distribution of the actinic light of the solar corona, by Frank H. Bigelow. April 19, 1890.
- " No. 16.—A logarithmic system of sensitometer number, by Frank H. Bigelow. May 1, 1890.
- " No. 17.—The automatic eclipse apparatus, by D. P. Todd. May 15, 1890.

U. S. BOARD ON GEOGRAPHIC NAMES.—In January of this year the Hydrographer to the Bureau of Navigation of the Navy Department, finding no end of complications resulting from the variety of forms of orthography and nomenclature of geographic names of the same place, on Government charts and in official publications, communicated to the Superintendent of the U. S. Coast and Geodetic Survey, his desire to bring about a unified practice in the work of the two offices in the use of geographic names in future publications regarding Alaska. The Superintendent cordially responded, and Lieutenant Clover, the assistant hydrographer, was appointed to arrange with Professor Mendenhall plans to consum-

mate this work. It was found that of the entire vocabulary of Alaskan names, there was hardly a word that did not admit three or more forms of spelling, and frequently as many of nomenclature in official publications. It was felt that results would be much more general if the Geological Survey and Smithsonian Institution came into the agreement. In answer to a note from Professor Mendenhall, favorable replies were received from the Director of the Geological Survey and the Secretary of the Smithsonian Institution, and representatives were sent. From the outset the general opinion expressed was that there was need of unification in geographic names in all sections of the country as well as in Alaska, and that it would be very beneficial should a board of representatives from different bureaus, or departments, consider all geographic names throughout the country that are at variance, and decide upon a common orthography and nomenclature that would be acceptable to all departments. The need of such an agreement was so apparent and so strongly felt by heads of offices and bureaus directly interested, that a mixed board has come into existence, representing by appointment the various departments interested.

The Board as at present constituted consists of:

Prof. T. C. MENDENHALL, Superintendent U. S. Coast and Geodetic Survey, *Chairman*.

Lieut. RICHARDSON CLOVER, U. S. N. Hydrographic Office, Navy Department, *Secretary*.

Capt. HENRY L. HARRISON, U. S. N. Light-house Board, Treasury Department.

Capt. THOMAS TURTLE, U. S. Engineers, War Department.

Prof. OTIS T. MASON, Smithsonian Institution.

Mr. HERBERT G. OGDEN, U. S. Coast and Geodetic Survey.

Mr. HENRY GANNETT, U. S. Geological Survey.

Mr. PIERSON H. BRISTOW, Post Office Department,
Mr. MARCUS BAKER, National Geographic Society.

The composition of the Board is conservative to a marked degree. Every member of it has eminent qualifications for the position. It will create no surprises or sensations, but, acting simply as referee, will dispose of practical questions in such a manner as to carry the indorsement of the intelligent public.

The report of the committee on organization as amended and approved by the Board, April 23, 1890, states :

"It is the sense of the committee appointed to consider method and scope of work and organization of 'The United States Board on Geographic Names,' that the primary object of the Board should be to bring about consistency and uniformity of practice in the geographic publications of the various departments of the Government. We recommend that the Board should at first assume the simple character of a board of reference for intelligently disposing of such practical questions within its scope, as may be referred to it. As the usefulness of the Board will depend largely upon the quality of its work, it appears to be essential that rules should be adopted to govern certain classes of cases in orthography and nomenclature, at the earliest practicable date; we do not consider it advisable, however, that such rules and principles should be promulgated until their fitness has been fully tested. It is thought that the Committee might advantageously report at an early date, on the use of capitals, the use of possessives and on punctuation."

The officers of the Board consist of a Chairman, a

Secretary and an Executive Committee of three members. The Secretary is required to keep a record of the decisions rendered and the action of the Board on cases considered. He is also to notify each member of the Board in writing of the substance of every question referred to the Executive Committee for investigation. In cases wherein this Committee comes to unanimous agreement, the rules require that it shall file a statement of its conclusions with the Secretary. The tenor of this paper, together with the question under consideration, shall be transmitted by the Secretary to each member of the Board, and if after five days have elapsed no dissenting opinion shall be filed in reply thereto, the conclusions reached by the Committee shall be announced as the decision of the Board. In case, however, of a dissenting opinion being filed, the conclusion reached by the Committee shall not be announced, and the question shall be submitted to the Board for its action. The affirmative vote of a majority of all the members of the Board shall be required in the final decision of any case in Board meeting.

The designations of membership on this Board from the Executive Departments are all made by heads of each department. The following circular is an announcement by the Secretary of the Treasury :

CIRCULAR. GEOGRAPHIC NAMES.

1890. Department No. 28.

Light-house Board. No. 2.

TREASURY DEPARTMENT,

WASHINGTON, D. C., May 1, 1890.

To Officers of the Treasury Department :

Capt. H. L. Howison, U. S. N., member of the Light-house Board, is also a member of the United States Board on Geographic Names, and

has been designated by that Board as the representative from the Treasury Department.

The United States Board on Geographic Names is composed of representatives from Government departments interested in such matters, and is formed for the purpose of discussing and deciding as to the proper orthography and nomenclature of geographic names; to decide as to the adoption of names for geographic points and places, when such names are in dispute, either as to the correct names to be used, or as to the proper spelling of such names; also to decide as to suitable names for points or places not yet named, and as to changing names, which are now, or may be, clearly improper or unsuitable.

The officers of this Department having such questions arising in their several offices are requested to refer them to this Board for its action and decision.

Communications for the Board should be addressed to Lieut. Richardson Clover, U. S. N., Secretary United States Board on Geographic Names, Hydrographic Office, Navy Department, Washington, D. C.

WILLIAM WINDOM,

Secretary.

Among the many papers already submitted to the Board was a list from the U. S. Hydrographic Office containing 177 disputed names in Alaska, citing different authorities, all official excepting one. Take a few as examples:

NAME.	AUTHORITY.
Behring.	C. S. Coast Pilot of Alaska. Hy. O. chart No. 68. B. Ad. chart Nos. 2172 and 2558. Lippincott's Gazetteer.
Bering.	C. S. charts Nos. 960, 900. B. Ad. charts Nos. 278, 2460.
Behrings.	C. S. Pacific Coast Pilot. Hy. O. chart No. 528. C. S. Pacific Coast Pilot.
Amoughtha.	Hy. O. chart No. 68.
Amukhta.	C. S. charts Nos. 960, 900. B. Ad. charts Nos. 260, 278, 2172, 2460, 2558.
Amoukhta.	Hy. O. chart No. 528.
Amuchta.	C. S. Coast Pilot of Alaska.

NAME.	AUTHORITY.
Becharoff.	C. S. chart No. 960.
L. Bochonoff.	Hy. O. chart No. 68.
Rochanoff Lake.	B. Ad. charts Nos. 2172, 2460, 278.
Oogahik.	Hy. O. chart No. 68.
Ugashik.	C. S. charts Nos. 900, 960.
Sulima.	B. Ad. charts Nos. 2172, 2460.
Stikine.	C. S. charts Nos. 900, 701, 960.
	B. Ad. chart No. 787.
Stikeen.	Hy. O. chart No. 527.
Lynn Canal.	C. S. charts Nos. 900, 701, 960.
Lynn Channel.	B. Ad. charts Nos. 787, 2172.
	Hy. O. chart No. 527.
Pumice Stone Bay.	Hy. O. chart No. 68.
Moorovskoy Bay.	C. S. chart No. 900.
Redoubt Volcano.	C. S. chart No. 900.
Burnt Mount.	B. Ad. chart No. 787.
Chinchinbrook.	Hy. O. chart No. 68.
	C. S. chart No. 900.
Hinchinbroke.	Hy. O. chart No. 68.
	B. Ad. chart No. 787.
Bering Haven.	C. S. chart No. 960.
Controllers Bay.	B. Ad. chart No. 278.
	Hy. O. chart No. 527.
	C. S. chart No. 702.
Controller Bay.	B. Ad. chart No. 787.
Comptroller Bay.	B. Ad. chart No. 2558.
Cape Yaktaga.	C. S. charts Nos. 900, 960.
Cape Yaktag.	Hy. O. chart No. 527.
	C. S. charts Nos. 701, 702.
Cape Yakaio.	B. Ad. chart No. 278.
Cape Yakiao.	B. Ad. chart No. 787.
Andreafsky.	Hy. O. chart No. 68.
Andreieffski.	C. S. charts Nos. 900, 960.
Andreievsky.	B. Ad. charts Nos. 2172, 278.
Andreaiivsky.	B. Ad. chart No. 2460.
Golovine.	Lieut. Stoney's map.
	B. Ad. charts Nos. 2460, 2172.
	C. S. chart No. 960.
Golovin.	C. S. chart No. 900.
Golovnin.	B. Ad. chart No. 260.
	C. S. chart No. 900.
Golovain.	B. Ad. chart No. 278.

NAME.	AUTHORITY.
Golofnin.	Lieut. Stoney's map. B. Ad. charts Nos. 2172, 2460.
Tchegoula.	Hy. O. charts Nos. 68, 528.
Chegoula.	B. Ad. charts Nos. 2460, 2172, 260, 278. C. S. charts Nos. 960, 900.
Chugnel.	C. S. Pilot of Alaska,
Andreanowsky.	Hy. O. charts Nos. 68, 528.
Andreanoff.	C. S. charts Nos. 900, 960. B. Ad. charts Nos. 278, 2460, 2172.
Andreanov.	Lippincott's Gazetteer.

It is not expected that the Board will announce any decisions until the autumn, when it shall have had time to digest principles for guidance, and to consider the large amount of subject matter now in the hands of the committee.

ALASKA.—An exploring expedition, under the auspices of the National Geographic Society, left this city early in June for Alaska. The party is in charge of Israel C. Russell, who traversed the Yukon region in 1889, and Mark B. Kerr. Both gentlemen are connected with the United States Geological Survey. They will go to the almost unknown country northward of the St. Elias Alps to study, map out and photograph the glacial streams of that region. The steamer of June 14th will convey them from Seattle, and the U. S. S. *Pinta* will be at their disposal upon arriving at Sitka, for conveyance to Yakutat Bay, which will be the starting point inland. A detour thence of about fifty miles, crossing the range of mountains at a low point, will bring the party within reach of the ice fields.

It is not denied that an attempt will be made to reach the 19,500 feet summit of Mount St. Elias if the condi-

tions are found to be more favorable than those known to exist on the south side. Doubts have been entertained as to the advisability of sending out an expedition for glacial work so late in the season, but after an extended discussion and hearing the testimony of naval officers and others who have had large arctic experiences, the conclusion was reached that the month of September was favorable for mountain climbing. At the same time the explorers expect to make such good use of the intervening time in studying the glacial system of Alaska, about which so little is known, that if they should fail, as all others have, in reaching the coveted summit this year, they will not feel that the trip has been useless. The details of the expedition have been well planned.

Under the auspices of the Case School of Applied Sciences, of Cleveland, Prof. H. F. Reed is also engaged in physical investigations in connection with the glaciers of Alaska. With his usual courtesy the Superintendent of the U. S. Coast and Geodetic Survey has extended valuable facilities to Prof. Reed.

The English-Eskimo and Eskimo-English Vocabulary,* compiled by Roger Wells, Jr., U. S. N., and John W. Kelly, interpreter attached to the U. S. S. *Thetis*, contains a greater number of words than any similar work. The Bibliography of J. C. Pilling has between six and seven hundred titles of books wholly or in part relating to these languages, but in all that number is found but an exceedingly small list of available vocabularies, and of these none are readily accessible. Dr. Barton's Vocabulary, 1798, and Capt. John Washing-

* Circular of Information, No. 2, 1890, 72 pp., U. S. Bureau of Education.

ton's, 1850, and a little English-Aleutian Dictionary, prepared by Stephen N. Buynitzky for the Alaska Commercial Company in 1871, are out of print, so that the most accessible work is that of Lieut. P. H. Ray, found in his recent report of the International Polar Expedition to Point Barrow (1885). This report contains about seven hundred words and three hundred and seven phrases. Mr. L. M. Turner, who has had large experience in Alaskan exploration, has in preparation a vocabulary of about twelve thousand words. The Wells-Kelly vocabulary has eleven thousand three hundred and eighteen English and Eskimo words. It was prepared at the suggestion of Com. C. H. Stockton of the *Thetis*, and is the result of four years' (1884-'89) study and practice, one year with the natives alone, when no English word was heard. It was rewritten and corrected every four months. Perhaps not the least interesting and valuable part of this work is that relating to the Asiatic Eskimo, or, rather, the American Eskimo, who are settled upon the Asiatic side of Bering Straits.

The vocabulary is preceded by an interesting and original ethnography of the Eskimo in Alaska and Siberia, by Mr. Kelly, who has spent several years in actual communication with and study of the tribes. The growing importance, scientific, commercial and political, of this territory enhances the value of every original research, however brief.

COLORADO CAÑON.—Col. Robert Stanton, of the Denver expedition now exploring the comparatively unknown regions traversed by the Colorado River gives out a partial account of the journey down the wild

stream from the head of the Granite Gorge of the Grand Cañon to the mouth of Diamond Creek. The narrative is so graphic and yet concise that it will afford pleasure to those who read it. Of that portion of the Granite Gorge from its head to Bright Angel Creek, Colonel Stanton has this description in his note book under date of February 7th :

"The cañon is growing more and more picturesque and beautiful the further we proceed. The Granite has lost its awful and threatening look, and slopes back in beautiful hillsides of variegated black, grey and green. Above this, next to the river, is a stratum of dark sandstone cut into horizontal layers, standing in an almost perpendicular wall, jutting out in places to the edge of the Granite and studded all over with points standing out in the air : darker in color than those behind them and the top edge cut into smaller points and crevices through which the light shines, giving a rough beaded appearance. As we look down the river or up a low side cañon, with the placid water between its polished walls of black and grey and green for a foreground, there rises above the dark sandstone tier upon tier, bench upon bench, terrace upon terrace, stepping back further and further and higher and higher, and in their immensity of height and proportions seeming to tower almost over our heads. First above the darker sandstone come the flattened slopes of the lime and mineralized matter in horizontal layers of yellow, brown, white, red and green. Then rise sheer walls of stained marble 1,000 feet or more, the lower portions yellow, brown and red, and the coloring of red growing brighter as it nears the top. Above this smaller benches of mar-

ble, at the top of each a little *mesa* covered with green grass and bushes, and above these a dozen or more terraces of scarlet and flame-colored sandstone, stained on their outer points with black, and the little benches between them relieved by the bright green of the greasewood and bunch grass, the whole covered with, perhaps, a couple of thousand feet of the lighter grey, yellow and white sandstone ledges, capped by pinnacles and spires, turrets and domes in every imaginable shape, size and proportion, with all their slopes covered and their tops fringed with pine, cedar and pinion trees, whose bright green stands out in bold relief against the flaming colors of the sandstone and the banks of pure white snow that cover the top and have run down into the many gulches along the sides.

"On many of the long stretches where the river can be seen for several miles the picture is one of grandeur and beauty. Grand with its walls of bright colors towering 2,500 feet overhead, beautiful in its long calm green slopes, with the quiet waters sparkling in the sun at their foot. From the mouth of the Kanab Wash for about twenty miles down is perhaps the narrowest and deepest part of the great inner gorge. At the bottom of the gorge is from 150 to 200 feet wide and the river runs between vertical walls, and fills the whole space from wall to wall. The walls of this portion of the cañon rise above the water about 3,000 feet, the benches are narrower and the vertical cliffs between the benches higher than in any other section. From one end to the other of this section there is a bench about 50 feet above high water, running almost parallel with the grade of the river, of solid marble wide enough to

build a four-track railroad upon, and not interfere with the perpendicular walls above or the river below."

GEOGRAPHICAL SURVEYS.—The geographical report of Capt. George M. Wheeler, Corps of Engineers, U. S. A., being vol I. of the Report upon geographical explorations and surveys west of the 100th meridian, has been printed (4to. 780 pp., 38 plates, 3 maps). This report was substantially brought to a close in 1879, but not presented for publication until 1887. Volumes 2 to 7 and a supplemental volume were printed between the years 1875 and 1879. About one-third of the present volume is occupied with descriptions of the areas covered by surveys west of the 100th meridian under the direction of the War Department. A valuable chapter entitled "Considerations upon National Government Land and Marine Surveys" is followed by a very important memoir upon the voyages, discoveries, explorations, and surveys to and at the west coast of North America and the interior of the United States west of the Mississippi River from the year 1500 to 1880. This memoir embraces :

1. An account of geographical discovery on the west coast and interior from 1500 to 1800, with a chronological list of expeditions. The "list" was submitted to the late James Carson Brevoort, Rev. Dr. B. F. De Costa, Henry Harrisse, Professors Fischer and Ruge, and revised in accordance with their suggestions. It is followed by photo-lithographs of tracings of certain old maps, with notes, intended to illustrate the progress of geographical information as to the North American continent during this period. The maps reproduced are :

The Island of Antilia, by Benincasa, 1463 (one of

the first maps indicating larger countries to the west of Europe).

America, from Ptolomæus, edit. Romæ, 1508.

America, from a globe in Frankfort, about 1520 (believed to be the first map upon which the name "America" appears).

North America, by Abraham Ortelius, 1589.

North America, by Zattieri, 1566 (reputed to be the first map upon which the Straits of Anian, between Asia and America appear).

America, from "Hondius," ed. 1609.

North America, from Purchas, 1625 (constructed to prove the possibility of a north-west passage).

America, by F. DeWit, Amsterdam, about 1670.

North America, by John Senex, London, 1710.

North America, by Edward Wells, 1722.

North America, by Thomas Jeffreys, 1782.

2. An epitome of Lieut. G. K. Warren's memoir, giving a brief account of each of the English expeditions since 1800 (to 1857), with added notes.

3. An account of explorations and surveys from 1857 to 1880.

A very large amount of valuable information nowhere else accessible is brought together in this volume, which would have been given to the world much earlier but for the prolonged illness of the author. It is the key to the whole history of U. S. Government surveys, and its usefulness is further augmented by an index of subjects and an index of names.

IRRIGATION.—The advance sheets of the tenth annual report of the United States Geological Survey, by J. W.

Powell, Director, contain the first annual report upon irrigation for the year ending June 30, 1889.

It is stated that the area of the arid region is about 1,300,000 square miles—one-third of the entire country. Major Powell interprets the law governing the survey, "not as authorizing the construction of works of irrigation, but as directing a comprehensive investigation of prevailing conditions, the whereabouts of irrigable land most eligible for redemption, and its segregation for homestead settlement and canal sites; the seepage; the evaporation; the vested rights, and how to maintain them; and, generally, the most economical methods of bringing the land and water together." He has been led to these conclusions from a careful consideration of the statutes and the executive correspondence preliminary thereto, and from examination of the reports made by committees of Congress, and the Congressional debates on the subject.

Acting under these convictions he submitted to the Secretary of the Interior for his approval, which it received, a plan for the survey, which is divided into three parts:

- I. The topographical survey.
- II. The hydrographic survey.
- III. The engineering survey.

The topographic work consists of surveys delineating the topographical features of the country, the areas of all drainage basins, the courses of streams, the situation of lakes, springs, and other bodies of water; the positions of possible reservoir sites, the location of dams and canal lines, and the altitude, position and general character of all irrigable lands.

The hydraulic and engineering work consists of the measurement of rain-fall and the study of general meteorology, measurement of river-flow, evaporation, and matter carried in suspension by water; the ascertainment of the duty of water, and the determination of the mode and cost of construction of dams and canals, and of the areas and contents of reservoirs.

It is not necessary here to advert to the numerous intricate problems—present and future—involved in an undertaking of this magnitude.

Work has been prosecuted in Montana, Utah, Colorado, New Mexico, Idaho, Nevada and California, with the following results :

Total area mapped out, square miles.....	43,530
Total area surveyed, " "	21,766
Reservoir sites selected for segregation.....	127
Reservoir sites surveyed	34
Canal sites surveyed.....	4
Total segregations of irrigable lands, acres.....	30,055,120

With succeeding appropriations work will be continued in these localities and carried on in North and South Dakota, Nebraska, Kansas, Indian Territory and Oklahoma, Texas, Wyoming, Arizona, Washington and Oregon.

The special committee of the United States Senate on the irrigation and reclamation of arid lands, of which Senator Stewart, of Nevada, is the chairman (the other members being Senators Allison, of Iowa; Hiscock, of New York; Plumb, of Kansas; Gorman, of Maryland; Jones, of Arkansas, and Reagan, of Texas), has submitted reports (majority and minority), accompanied by testimony, maps and drawings, the whole forming several volumes, and by far the largest and most important

contribution to the American literature of irrigation yet made.

While the entire committee is in sympathy with irrigation, the views of the majority and of the minority as to the methods of accomplishing the work are not in harmony, and an active controversy has resulted. It is claimed by the majority (Mr. Stewart and others) that *topographic* survey of the arid regions is unnecessary, slow and expensive; that it be discontinued. That the hydrographic branch should be turned over to the Signal Service; and, as they differ with the director as to the method of conducting the survey, that the work be placed under the direction of a Commissioner of Irrigation, subordinate to the Department of Agriculture.

It is the opinion of these gentlemen that in order to specify irrigable lands it is only necessary that irrigation engineers first go over the country to find out what lands are irrigable. They must identify what townships and sections include the irrigable lands, represent them on a transcript of the Land Office map, and report them, section by section, to the Land Office. That topographic maps are of some convenience in the way of general information of a geographical character, but that they can be dispensed with without any serious inconvenience. That the maps already in existence, viz.: Land Office surveys, railroad surveys, and the topographical surveys of Wheeler, Hayden and Powell furnish sufficient information for the guidance of the engineers.

But by far the most important recommendation of the majority is for the repeal of that portion of the section of the Act of October 2, 1888, which provides that "all

the lands *made susceptible of irrigation* by reservoirs, ditches, or canals shall be reserved from sale as the property of the United States, until provided by law."

The bill submitted by the majority reserves the unappropriated waters of the lakes and rivers on the public lands for such beneficial uses as shall be determined by the States and Territories in which such waters are situated, and places them under the control of the States and Territories, subject only to the paramount authority of the United States. It reserves the right of way for ditches, canals, and other hydraulic works for the use of irrigation, and allows the flowing waters to be diverted from the natural beds of streams upon the arid areas. Access is also reserved over the public land, west of the ninety-eighth meridian west, to all natural waters on the public lands for man and domestic animals. It also reserves to the United States the adjudication of all questions and disputes that may arise in relation to the storage, conservation, flowing and distribution of all natural waters, flowing or standing, located within or passing through the boundaries of two or more States and Territories within the area described.

The minority of the committee (Messrs. Reagan, Gorman and Jones), recommend Congressional action which is opposed to that recommended by the majority. They are of opinion that the present irrigation survey is performing its duties in compliance with law, and in an efficient and thorough manner, and that the work under it should proceed at a reasonable rate of progress until it is finished. It is estimated that survey will cost \$7,000,000, but that in making the maps it will save \$4,000,000 to the Geological Survey. Thus the real

cost of the irrigation survey will be but \$3,000,000 over and above the cost of the geological survey. The survey needed for the sub-humid region of the Great Plain is purely a geological survey based on topography. The topographic work is necessary, economical and legal, and is believed to be the proper basis for a hydrographic survey.

The creation of a new bureau of irrigation in the Department of Agriculture is considered unnecessary and unwise, and reasons are advanced why the hydrographic branch of the work should not be turned over to the Signal Service.

They claim that the legislation already accomplished by the Act of October 2, 1888, which reserves the sites for irrigating works in the hands of the general government, and reserves the lands made susceptible of irrigation thereby from homestead settlement is wise, and should not be repealed. The desert-land laws and the pre-emption laws and the timber-culture laws which are in effect repealed by that act, should not again be made operative, for by their agency large tracts of land have heretofore been aggregated in the hands of wealthy individuals and corporations. That the bill reported by the majority of the committee is in the interest of the great cattle companies that pasture their animals on the public domain, and opposed to the interests of the farmers making homesteads on the lands. That the land should be held for settlers, and not for speculative syndicates and companies who would sell or rent the broad acres at their own price.

The Constitutional Convention of Idaho in August 1889, memorialized the Secretary of the Interior as fol-

lows : " Whereas, the Government of the United States has taken steps towards redeeming the arid lands of the West and

Whereas, for the purpose of establishing a thorough system of storage reservoirs, canals, and irrigating ditches, engineering parties are making surveys for this purpose ; and

Whereas, it is learned that the plans of the Government are threatened to be thwarted by speculators having men to follow up these surveys to make filings on lands, reservoirs, and canal locations ;

Resolved, By the Idaho Constitutional Convention, now assembled at the capital of said Territory, having the good of the general public and the good of the people of Idaho, with the prosperity of the Territory at heart, do hereby memorialize the Department of the Interior to take such action at once as will remedy the evils which threaten this fair Territory in the manner outlined in this memorial."

This memorial was the basis of the memorable circular from the General Land office under date of August 5, 1889, and sent to registers and receivers of the United States district land offices, which after citing the provisions of the Act of October 2, 1888, promulgated the following order :

" You will therefore immediately cancel all filings made since October 2, 1888, on such sites for reservoirs, ditches, or canals for irrigating purposes and all lands that may be susceptible of irrigation by such reservoirs, ditches, or canals, whether made by individuals or corporations, and you will hereafter receive no filings upon any such lands."

The features of the minority's bill are : 1. Provision for a survey of the arid lands into natural irrigation districts. 2. The segregation of the irrigable lands. 3. Lands already irrigated shall be declared irrigable for the purposes contemplated. 4. Certain irrigation works shall be constructed only on sites designated and reserved therefor, in order to protect water rights and to conserve the waters for beneficial purposes. 5. The division of the waters among the districts. 6. Organization of districts situated in two or more States and Territories. 7. Non-irrigable lands shall remain in the possession of the Government as forage and pasturage reservations and catchment areas for irrigable lands. Irrigable lands to be disposed of to homestead settlers in tracts not greater than 80 acres. 8. The attachment of water rights to the homesteads of the irrigable lands. 9. Unauthorized irrigation works unlawful. 10. Plan for the organization of irrigation districts. 11. Laws and rules for the use of the waters belonging to the districts and for the protection and use of the forests and pasturage. 12. General legislation by States and Territories relating to the use of the waters, forests and pasturage. Methods by which the capital for the construction of irrigation works may be obtained. 13. States to provide boards of irrigation commissioners to supervise and approve works authorized and contracts made by district commissioners.

The general effect of this bill is to turn over the control of irrigation to the States and the districts, the general statutes to be made by the States, and the specific rules by the districts. Therefore, it will accomplish local self-government in relation to irrigation and the forest and pasturage administration. It relieves the general gov-

ernment of all subsequent legislative and administrative duties, except only to complete the irrigation survey of the whole, and the linear survey of the irrigable lands, and also to administer the homestead laws, coal-land laws, mining-land laws, and town-site laws through the General Land Office.

There has as yet been no Congressional action on either bill. Meanwhile the full amount (\$750,000) asked by the directors for work of the survey under existing plans, for the fiscal year 1890-91, has been favorably reported and passed upon in the House of Representatives.

INTERCONTINENTAL RAILWAY.—Of perhaps greater importance than anything else considered by the recent conference of American nations was the international railroad idea, and no other matter which was before the Conference has been advanced to such a position. The report of the committee on railway communication was not finally acted upon until late in April. On the 19th of May the President of the United States communicated this report to Congress with a special message, and on the 29th of the same month the Committee on Foreign Affairs of the House of Representatives reported a bill "to provide for a survey and to encourage the construction of a continental railway to connect American nations," embodying some of the provisions recommended by the Conference; that is to say, an invitation to the several South American governments to co-operate with the Government of the United States in the appointment of an international commission of engineers to examine the possible routes and report their length, cost and advantages, and make proper surveys for a continental railway to connect the United

States with other republics of the American continent ; each government to pay its proportionate part of the expense of the survey.

In opening railways between the Atlantic and Pacific oceans, the United States and Canada and other countries have performed works of equal or greater magnitude than will probably be required to establish unbroken railway communication with all the republics south of us.* The building of the Baltimore and Ohio and Pennsylvania railways over the Allegheny mountains were greater undertakings than that of an intercontinental railway would now be. The most difficult portions of a railway to South America will not exceed those of the Mexican railway from Vera Cruz to the City of Mexico, or those of the Panama railway across the isthmus. Much has already been accomplished in the different Spanish-American countries in building parts of the proposed through line, which, when combined, will reduce the entire work and distance almost one-half ; so that not only can continuous railway communication with those countries be considered feasible, but also in a fair way to be realized. From the southern terminus of the railroads now in operation in Mexico to the northern terminus of the Argentine system the distance is estimated at 4,900 miles. In this distance 230 miles are now in operation ; of the remaining distance about 1,800 miles are already under survey and construction, which, when completed, will leave about 2,870 miles to be located and constructed in order to complete the line that will eventually unite the republics of the Western hemisphere,

Lieut. George A. Zinn, Corps of Engineers, U. S. A.,

* Report of Henry G. Davis and Andrew Carnegie, delegates from the U. S. to the International American Conference.

at the request of Messrs. Davis and Carnegie, members of the committee on railway communication of the International American Conference, prepared an elaborate paper with reference to the railways of Mexico, Central and South America, and the prospects of railway building in these countries, especially with reference to an intercontinental line; in which he described the topographical features of each group and of each country, especially in those parts where there has been but little railway development. All existing railways are noted, and the most important described; while full information is given as to projected lines, concessions, finances, etc. He also outlines a plan for an intercontinental railway, adding articles on railway gauges and metal ties.

KOREA.—Mr. J. B. Bernadou, U. S. N., recently entertained an audience in this city with an account of the Koreans. His reminiscences were personal, for he was for some time attached to the American legation at Seoul. He said that the native maps of the country were not reliable, and that the reason why no accurate one existed was because foreigners have only of late years been allowed to penetrate the interior. The ignorance of the Koreans of the outside world, prior to the treaties of 1881-82, was remarkable. The lecturer exhibited a native conception of the earth. The map represented the earth as a circular plane with the land and its outlying islands in the centre, and a ring of unbroken water upon the outside. Around the central area of the mother (China) are grouped different States, among which Korea and Japan are on the eastern side, and some of the European nations on the western. The conservatives yet cling to their old-time notions.

Korea is a mountainous country, with a main chain, bearing an extinct volcano, forming the back-bone of the peninsula. The coast is forbidding. The climate exhibits wide ranges of temperature, from a Nova Scotia winter in the north-east to that of Louisiana in the south. The winter in all but the southern parts is long and severe, and sets in with great suddenness. Mr. Bernadou accounted in an interesting way for many of the traditions and distinctive habits of the people of this little-known region.

POOL OF BETHESDA.*—The excavations of the Algerine monks under the ruins in the rear of the Crusader church of St. Anne in Jerusalem, have gradually transferred opinion from the Birket Israel in favor of the former locality as the site of the Bethesda. This opinion has been strengthened by the discovery of a rock-hewn pool containing water, beneath three successive structures. Subsequent excavations revealed the remains of two tiers of five-arched porches, the lower tier being in the pool. The intelligent labors of the monks who are in charge of the property have been further rewarded by the recent discovery of another pool, containing a good supply of water, to the westward of that first discovered; the whole agreeing with the descriptions of the Bethesda, as given by the fathers of the Church and Christian pilgrims and writers as early as the fourth century. The correspondence in number of the five porches to those mentioned in the Gospel of St. John will not escape notice. Steps cut in the rock lead down to the water. An ancient Christian church in ruins surmounts the entire space. The remains of the upper tier of porches extend above the pool at right angles from the

* Dispatch from Henry Gilman, U. S. Consul at Jerusalem.

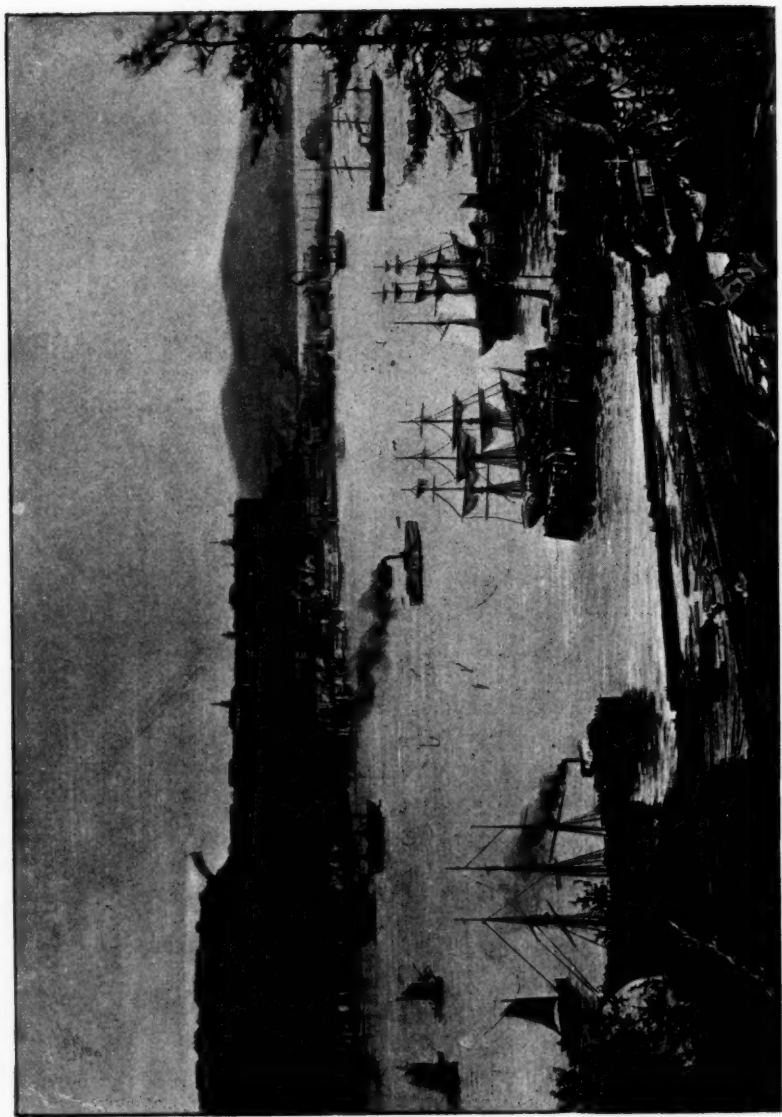
north wall of the crypt beneath the church, in which the apse, at the east end, though dilapidated, is distinctly defined. On clearing away the debris that choked the fifth porch westward of the apse, all these discoveries culminated in revealing the remains of a painting, or fresco, upon the plaster of the wall in the rear, the colors of which, quite bright when first discovered, have since greatly faded.

A summary of the discovery would be about as follows: First, the rubbish covering the ruins, and built upon by modern Turkish houses; next beneath is the small church with apse; under this the crypt with five porches containing the frescoes; and fourth, underneath all, the pool itself, cut in the solid rock, and with five arches of well preserved masonry.

NEW ZEALAND.—The United States Consul at Auckland, in a recent communication to the Department of State says that it is impossible to appreciate, or have any adequate conception of, New Zealand's superiority over the other Australian colonies. He makes comparison of several economic and industrial features, common to all of them, but showing preponderating percentages in favor of New Zealand. The wonderful productiveness of her soil is, in many respects, unequalled in the world. The colony is also rich in all kinds of minerals which as yet have not been properly developed. The climate is mild, equable and invigorating. He is surprised that more is not known of the numerous natural hot springs and lakes, and of the health-restoring properties of the former, and sees no reason why New Zealand should not become the invalid's paradise.

H.





QUEBEC.